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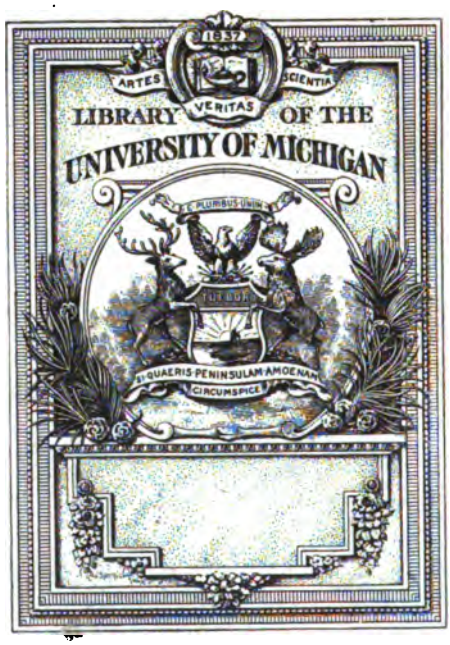
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REPORTS

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FROM THE

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1889.

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WEIGHTS, MEASURES, AND CURRENCY MENTIONED IN THESE REPORTS.

Name.	Country.	U. S. equivalent.
Centner	Germany	110.230 pounds.
Cwt	England	112 pounds.
Feddan	Egypt	1.038 acres.
Franc	France	19.3 cents.
Hectare	France	2.471 acres.
Hectoliter		26.417 gallons.
Kilogram		2.204 pounds.
Liter		1.0567 quarts.
Mark	Germany	24 cents.
Milreis	Portugal	$1.084.
Öre	Sweden	100 öres = 1 crown = 26.8 cents.
Peseta	Spain	19.3 cents.
Picul	Siam	133.35 pounds.
Pound	Egypt	$4.9641.
Pound	English	$4.86.
Ruble	Russia	55.9 cents.
Rupee	India	33.2 cents.
Sol	Peru	96.50 cents.

CONSULAR REPORTS

ON

COMMERCE, MANUFACTURES, ETC.

No. 95.—JULY, 1888.

COST OF MANUFACTURING WORSTED COATINGS.

The manufacture of worsteds for men's wear has of late years taken a great rise, much to the detriment of goods made of carded wool, cassimeres, etc. The advance made in the improvements of combing machinery, by which wools of almost any length can be combed and used for worsted manufacturing, has undoubtedly contributed much to this end. Formerly only long staples were used, and this gave the English quite an advantage, whose breeds were principally supplying the material. But now the manufacture of worsteds has gone abroad, and is largely conducted in other countries as well as in England. It is not saying too much to declare that England is still holding an advanced position and is doing perhaps more of an export trade in worsted cloths than all other exporting nations combined. This is undoubtedly due to the many advantages derived from the early knowledge and practice of the manufacturing processes, which have become hereditary with the working classes and the manufacturers and produced a keen adaptation and a subdivision of the labor processes, so that by a "rule of thumb" method better results are realized than in other countries by perhaps more studied methods.

In the United States naturally much attention has been paid to the domiciliation of this industry. The difficulties were manifold. First, an inferior knowledge of the manufacturers and their staff compared to the thorough training the English manufacturers and managers brought to their calling, reared from their infancy to the trade as they were, and, secondly,

the absence of a trained class of operatives, such as Yorkshire abounds in. It is one thing to make carded, soft wool goods and quite another to make combed wool goods where the flaws and imperfections all lie and show on the smooth surface and can not be covered by a deceiving woolly face, especially so when you are limited in the choice of your wool. I well remember the early struggles of the industry, and the New York auction houses undoubtedly do also. But, as in so many other things, the manufacturers have not stood idly by, but by hard work and perseverance have succeeded in overcoming a great many of the seemingly insuperable difficulties, and with free wool, and a consequently greater range of selection, would undoubtedly in a very short time be on a footing far above any that they can ever expect to gain otherwise. The samples of American worsteds which I have brought over for comparison astonished English manufacturers and received great praise from them. A comparison of the manufacturing cost seemed to me, before I entered into a searching inquiry, to be hazardous, however, and to prove very likely what was so tersely expressed by the late Horace Greeley, when he invited a visitor to a choice between a glass of milk and a glass of champagne, "Both cost the same," he said, "the wine is imported, the milk is raised on the farm." How disappointing such forecasts are will be learned from the following comparative statement of cost. The inquiry I began about two years ago; but I found so many points to look into, so many statements to compare and to verify in America, and *vice versa*, that only now I am able to bring the investigation to a close. The goods selected for comparison are 16-ounce 6-4 black corkscrew worsted coatings, well known under this name and an article of universal use.

A.—THE AMERICAN GOODS.

1. The goods are made in the neighborhood of Philadelphia. I was told by different manufacturers there that wages were higher in and around Philadelphia than in Rhode Island or the Eastern States generally. Indeed, I was told that in textiles Philadelphia is the dearest labor market on account of the diversified industries and the great demand for labor. I do not express my own opinion on this score, but simply repeat information. Partly also to the fact that in the Eastern States a greater number of skilled operatives can be found than in Philadelphia and the cost of production correspondingly decreased in consequence.

The mill manufactures worsteds alone. The wool is bought in the grease and goes through all the manufacturing processes in the mill. The following account is for the goods mentioned, 16-ounce corkscrew, 55 inches wide, 100 picks to the inch.

The wool and the yarn.—The wool is XX Ohio. Two and three-quarter pounds of wool yield 1 pound of yarn. The scouring produces 48 yards of clean wool out of 100 pounds of grease wool. The combing gives 23½ pounds of noils. The account is 275 pounds of grease wool (December,

1887), at 34 cents per pound, $93.50; less 23½ pounds of noils, at 40 cents per pound, $9.40; net cost of wool in 100 pounds of yarn, $84.10. The manufacturing cost is as follows:

	Cents.
Wool per pound	84.10
Sorting	3
Scouring and carding	1.13
Combing	2.48
Spinning	2.63
Doubling and twisting	2.29
Miscellaneous expense, engineer, and general expense up to and including spinning	1.32
Total	96.95

Finished yarn, price 96.95 cents; in which wool stands 84.10 cents and labor, including general expense in the spinning department, 12.85 cents. The spinning cost in labor is made up as follows: 14 mules at 550 spindles; output per week, 6,500 pounds of No. 40 yarn — 7 men at $10.50, $73.50; 14 boys at $3, $42; 7 boys at $2.50, $17.50; 1 packer, $3; 1 roller coverer, $6; 2 waste sorters at $2.50, $5; total, $172.50, or 2.63 cents per pound.

The doubling and twisting employs 20 girls at $4.50, $90; 2 girls at $3, $6; 8 reelers at $5, $40; 1 overseer, $15; total, $151 per 6,500 pounds, or 2.29 cents per pound. The combing and drawing employ girls at the rate of $5 per week.

The weaving, dyeing, and finishing.—The goods are 5,760 ends of 240 warp and single-thread filling. The cost is as follows:

	Cents.
The labor for weaving, paid per yard, is	16.2
Warpers, loom-fixers, and overlookers	3.7
Burling	.5
Mending	4
General weekly wages	2.7
Dyeing wages	1
Finishing	4.1
Total labor	32.2
Supplies, dye-stuffs, soap, coal, and findings	4.2
General expense	1.32
Total	37.72
Cost of yarn	96.95
Net total	$1.34.67

2. *Account of a mill in Rhode Island. Largest proportion of output of worsted coatings.*—The account taken here is the general mill account, and comprises the whole annual product of the mill. It will serve to corroborate account No. 1. Though the goods are not specifically the same, yet the same class of goods are manufactured, and as most items cover the same operations and classifications, a comparison will serve the full object of this inquiry.

Mill account.—Pounds of grease wool consumed in a year, 777,533; pounds of wool carded, 356,868; hands employed in sorting, 16.

	Cents.	Cents.	Cents.
1. Wages paid to wool sorters, $7,822.25, per pound carded			2.19
2. Wages paid for wool scouring, $1,351.20, per pound			.38
3. Wages paid for wool carding, $5,611; superintending, $1,200; $6,811, per pound			1.90
Plus 25 per cent. for shrinkage in manufacturing			.48
4. Cost of spinning:			
a. Wool yarn, per pound			2.18
b. Worsted yarn, per pound			4.2
5. Cost of dyeing 452,267 pounds:			
Wages, $5,686.11, per pound	1.25		
Twenty-five per cent. shrinkage in manufacturing	.31		
		1.56	
Materials per pound dyed	3.05		
Shrinkage	.76		
		3.81	5.37
6. Weaving:			
a. Per yard of heavy worsteds	15.3		
b. Per yard of light worsteds	15.3		
c. Per yard of overcoatings	14.7		15.3
d. Per yard of cassimere	6.3		
7. Cost of finishing, burling, mending, etc			4.84
8. General expense, superintendence, etc			3.5
Total			40.34

The wages paid in this mill run as follows:

a. Carding.—Overseer, $25 per week; second hand, $10 per week; common hands, $4 to $8 per week.

b. Spinning.—Wool spinning: 1 overseer, $13.50 per week; 1 second hand, $10.50 per week; 17 spinners (young men), average, $6.50 per week. Worsted spinning: 1 overseer, spinning and drawing, $24 per week; 1 second hand, $9.75 per week; 31 spinning girls, average, $4.20; 15 doffers (small boys), $2.40.

c. Dyeing (fourteen in all employed).—One overseer, $21 per week; common hands, average, $7.20 per week.

d. Weaving (paid by the piece).—The mill employs 73 male and 45 female weavers. The male weavers earn, on an average, $8.50 per week, and the females $7.

e. Finishing, burling, mending, etc.—Overseer, $27 per week; second hands, $10.50 to $12 per week; common hands, $7.50 per week; women, burling and mending, $3.50 to $4.50 and $6.

f. Mechanics.—Overseer, $16.50 per week; common hands, $10.50 per week; carpenters, $12 to $13.50 per week.

The yearly product.—The mill produced in the year, for which this account stands, 54,000 shawls, 162,723 yards of worsted coatings, 18,604 yards of overcoatings, 15,472 yards of cassimeres, and 16,123 yards of dress goods. If we allow for a shawl to be equal in the finishing and general expense to 2 yards of worsted coatings (the extra labor on shawls, however, is in a greater ratio than that), and cassimeres and dress goods one-half the ratio, and the overcoatings equal to a yard of worsted, then we have 108,000 yards

for shawls, 162,723 for worsted coatings, 18,604 for overcoatings, 15,472 for cassimeres, or a total of 304,799 yards 54 inches wide. The total expense for finishing, burling, mending, etc., is given at $14,952.89, from which I have calculated the yard expense on worsted as above, according to this computation of yards. The general expense, superintendence, etc., counted as 3.5 cents per yard, but no gross sum given, would represent, according to this, the total sum of $10,668.

The mill is one of the best managed in the United States. They make their own soap from the wool scourings, have their own repair and machine shops, and an organized fire department, ready for any emergency, though at no very imminent risk of being called out, as the mill is built entirely of stone.

The items of cost compare as follows:

Items of expense.	Philadelphia.	Rhode Island.
	Cents.	*Cents.*
Wool sorting	3	2.19
Scouring and carding	1.13	2.76
Combing	2.48	
Spinning	2.63	4.2
Doubling and twisting	2.29	
Miscellaneous expense	1.32	.....
Weaving	16.2	15.3
Warpers, loomfixers, etc.	3.7	.....
Burling	.5	.....
Mending	4	.....
General weekly wages	2.7	.....
Dyeing wages	1	1.56
Finishing	4.1	4.84
Supplies, dyestuff, etc	4.3	3.81
General expense	1.32	3.5
Total	50.67	.....

So far as the direct and distinct statements of the Rhode Island figures go they are a verification of the amount of the full cost given in the first column of the article now under comparison, namely, worsted coatings.

B. — THE ENGLISH GOODS.

If worsteds are manufactured in England on the same plan as in America I have not yet been able to discover the place. Quite a number of establishments, in themselves large manufacturing concerns, are set in motion on the receipt of an order. In quite a number of instances the owner of the weaving sheds is the principal manufacturer and shipping merchant. He may receive his orders from the commission merchant in Bradford or direct from customers abroad. Very often, also, the owner of looms has his establishment away out in the country, and gets his orders and yarns from the merchant, and delivers the woven goods to his customer, to be then sent by the latter to the dyer, and then to the finisher; and after receiving them back be again subjected to a close examination before being shipped. The

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REPORTS

FROM THE

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tioned by the manufacturing and frequently the shipping firm. I have taken it, therefore, for the last itemization.

The goods of the character specified are paid at the rate 13*s.* 6*d.* or $3.28 per piece of 56 yards, which gives about 46 yards dyed and finished goods. As we have in American dealt with the finished length we have to do the same here. Dressing and twisting is paid at the rate of 4*s.* 6*d.* or $1.08; burling and mending is paid at the rate of 4*s.* 6*d.*, or $1.08, to which is added the weaving wage of 13*s.* 6*d.*, or $3.28 to cover all additional expense of manufacturing. In all, $8.72 per piece, or per yard 18 cents.

Total English cost.

EXHIBIT I.

	Labor.	Additional cost.	Total.
	Cents.	*Cents.*	*Cents.*
Sorting	1.5	.....	1.5
Scouring, carding, combing	3.5	3.5	7
Spinning	4.5	3.5	8
Dyeing	2.7	2.9	5.6
Finishing	2	4	6
Weaving	7.7		
Dressing and washing	1.8	7.17	17.94
Burling and mending	1.8		
	24.97	21.07	46.04
Cost of wool	.....	.....	48
Total	.....	.....	94.04

Another mill account gives me the following details of manufacturing cost:

EXHIBIT II.

	Cents.
Sorting	1.5
Scouring, carding, and combing	7.5
Spinning, doubling, and twisting	10
Weaving, 3*s.* 6*d.* for 49 yards	6.7
Warping and overlooking, 72 cents per piece of 49 yards	1.5
Mending, $1.20 per piece of 49 yards	2.57
General labor	2.5
Dyeing, 12 shillings or $2.88 per piece of 49 yards	5.87
Finishing	6
Other expenses	4
Total	48.14

Though this account is carried out differently yet it shows approximately the same result. The goods are of the class as in the first exhibit but sell at about 6 pence less a yard. The difference is mainly in the wool. What

stands for other expenses in Exhibit II is entered in Exhibit I under weaving expense. The two exhibits drawn up in full for all weaving charges compare as 17.94 for I and for II as 17.27. This is certainly as close a proof of the general correctness of information received on the subject as can be expected, especially when we bear in mind that mill accounts here, in woolens at least, are not carried out to such mathematical precision as they are in America. Here in England manufacturers go largely on general rules of ciphering cost. As in manufacturing so in calculating, much of a "rule of thumb" method.

We can now draw a comparison between American cost and English cost in the same line of goods:

Comparative cost of manufacturing 16-ounce 6-4 black corkscrew worsted coatings in England and in America.

Items of cost.	American cost.					English cost.		
	Philadelphia.			Rhode Island.		No. I.		
	Labor.	Other expenses.	Total.	Labor.	Other expenses.	Labor.	Other expenses.	Total.
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
Cost of sorting	3	.....	.....	2.19	.....	1.5	.....	1.5
Scouring and cardi'g.	1.13	.....	.....	} 2.76		} 3.5	3.5	7
Combing	2.48	.....	.....					
Spinning	2.63	.....	.....	} 4.2		} 4.5	3.5	8
Doubling and twisting	2.29	1.32	12.85					
Weaving	16.2	.....	.....	15.3	.....	7.17	.....	.....
Warping, etc	3.7	.....	.....	.....	.....	1.8	.....	.....
Burling	.5	.....	.....	.....	.....	1.8	7.17	17.94
Mending	4	.....	.....	4.84	.....	.....	.....	.....
Weekly wages and salaries	.....	27	28.42	.....	3.5	.....	.....	.....
General expenses and sundries	.....	1.32	.....	.....	.....	.....	.....	.....
Dyeing wages	1	.....	.....	1.56	.....	2.7	.....	.....
Dyestuffs, etc.	.....	4.3	5.3	.....	3.81	.....	2.9	5.6
Finishing, etc.	3.1	1	4.1	.....	.....	2	4	6
Total cost	40.3	10.64	50.67	.....	.....	24.97	21.07	46.04
Cost of wool	.....	.....	84.10	.....	.....	.....	.....	48
Grand total	.....	.....	134.77	.....	.....	.....	.....	94.04

The English total and the Rhode Island totals would show a higher cost in England if we drew a comparison from the data given. I do not, however, make a comparison, as the Rhode Island figures are only introduced in support of the statement of the Philadelphia manufacturers referred to above. The English totals, corresponding with like items of the Philadelphia account, contain for all operations conducted by outside parties, as in scouring and carding, combing, spinning, dyeing, wages, and finishing, profit for the respective branch, which, whatever that may amount to, would have to be added to the cost of Philadelphia goods to bring the two upon the same

equal basis. The general charges for weaving in England contain a good percentage of what in America is covered by "general expenses." Both accounts in *the total cost* come close upon one another. The English total cost is apparently increased by the different methods in which manufacturing is conducted. On the whole list, however, if closely examined, in all items (especially in work done outside, such as scouring and combing, spinning, dyeing, etc.), charges will be found credited in America to labor which in England are contained in the middle column—managing expense, weekly wages, etc. Whatever may be the proportion which one item or another may bear upon the first column or the second, it is certain (and upon this total cost a number of accounts in my possession come to nearly unanimous statements) that the total is the charge which goes upon the wool, and both combined make the price of the article which we have to meet in competition. We see, then, when we compare both, that the difference in the manufacturing cost is not very formidable. But were we to grant all the differences in the middle column to balance all possible claims of American manufacture for insufficiency of cost, statement of profits, interest, etc., and take the whole difference of the labor-cost statement as constituting an absolute difference in the cost of production, even then we should have to meet only 15 cents per yard higher cost of manufacturing a yard of fine worsted coatings such as described, and worth at the least $1 net per yard in England. The wool, however, costs 36 cents more in the pound of cloth, or 2.4 per cent. more, than under a more liberal allowance the labor difference amounts to.

The figures of the comparative statement are very suggestive. It would lead me beyond the intended scope of this report were I to enlarge upon them now. One distinct feature impresses itself upon our observation in this connection—that every branch of manufacture is done more economically in America (the scouring and combing, spinning, dyeing, and finishing), except the weaving. This is due to the fact that in the weaving branch alone individual skill is the greatest requisite, and can not be superceded by mechanical devices, nor have we as yet been able to overcome the higher weekly wages, consequent upon the higher subsistence of our working classes, by giving two or more looms to operate to a weaver, as in dress goods (see report upon the subject), where one loom is the rule abroad.—TUNSTALL, *June 22, 1888.*

J. SCHOENHOF,
Consul.

JAPANESE "KOJI."

This description has been written by Professor C. C. Georgeson, an American professor in the Imperial Japanese Agricultural College, at Tokio, to whom the United States minister referred a letter, requesting the information, from Mr. Wm. M. Murtrie, professor of chemistry in the University of Illinois, at Champagne, Ill.

RICHARD B. HUBBARD.

PREPARATION OF "KOJI."

There appears to be some diversity in the methods of preparing this ferment. It is made both in the *sake* breweries and in special *koji* factories, and while the chief features must be alike in all cases the details in the manipulation are varied to suit the accommodations of the works. Thus one of the important points is to provide fermenting rooms in which an even high temperature can be maintained. In *koji* factories these apartments are usually some 15 or 20 feet under ground in some sufficiently dry place, egress being had by means of a shaft, while in *sake* breweries these chambers are frequently arranged in ordinary buildings, the walls being lined with straw mats and mud to prevent radiation. The materials used are water, rice, and *tane* (seed or leaven). The rice usually used is the common starchy kind known as *uruchi*. Glutinous rice (*mochigome*) is not used as far as I can ascertain. The *tane*, which is a most important constituent, is the spores of a fungus, *Eurotium oryzeæ Ahlb.*, and occurs as a yellow powder, which, in a certain stage of the proceedings, is mixed with the rice. It is the substance which, in germinating on the rice grain, changes part of the starch into dextrose and dextrin and gives it the properties of a ferment.

To begin with, the rice must be thoroughly cleaned; that is, the thin covering (*testa*) of the seed must be removed. It is maintained that if not removed the liquids with which the *koji* is mixed are inclined to putrify. The rice is next washed by stirring it in a tank of water till all dust and adhering fine particles are floated off, after which it is steeped for some hours to soften the grain.

The steaming may be done in the ordinary way by means of a steam boiler, but usually the method followed here is of a more primitive nature. A large pot fixed over a furnace is filled with water. Over the mouth of this pot is fitted a tall wooden tub with double bottom, in which the rice is placed and covered with a lid. The bottom on which the rice rests is perforated with numerous holes and covered with a thin cloth to prevent the grain from falling through them, and the lower bottom has one or more large holes. The steam generated from the boiling water in thus passing through this apparatus has the desired effect upon the rice.

The steaming completed the rice is spread on straw mats to cool somewhat, and soon after, when the temperature has fallen to 98° to 100° F., the above-mentioned fungus spores or *tane* are sown upon the mass and thoroughly mixed with it. The exact quantity of spores used is not of so great importance as is their thorough and uniform distribution. The usual amount is very small, about 1½ to 2 c. c. per bushel of steamed rice. The spores used in most factories are obtained in Osaka, but as to the manner of growing them I am not fully informed. Parties interested are loath to part with their secrets. So far as I can learn, however, the rice thus impregnated will in due time mature the plant, and the spores form on the surface of the grains as a yellow powder; when the crop is ripe the rice is dried to a degree, spread upon paper, and then stirred or rubbed till the spores are worn off by attrition and collected on the paper. This process is said to take place chiefly in winter.

After mixing the spores with rice the mass remains in bulk for eighteen to twenty hours, being merely covered with mats. The temperature of the room is not high at this stage. The following day the rice is distributed into shallow, wooden trays, each tray holding about 3 liters, and spread in a thin layer on each. These trays are then carried to the warmest room, where

the minimum temperature should not be lower than 75° F., and here either placed on shelves or piled one on the other on the floor. In some cases the rice is sprinkled with water and left standing in baskets for some hours before it is distributed on the trays. In other cases the trays are not deposited in the warm room till toward evening of the second day (the day after sowing the *tane*), and they are then left undisturbed till early in the morning of the third day. In the former case, that is, when the rice is not moistened previous to being put on the trays, the trays are left standing only four or five hours, when the contents of each must be thoroughly stirred by hand, which process is again repeated after another four hours of rest, the second stirring occurring thus toward the evening of the third day. At this stage the fungus grows rapidly and much heat is evolved; the grain becomes opaque, assuming a fibrous texture on the surface and becomes somewhat sour in taste. Now it depends on the condition of the mass whether there is danger of the temperature rising too high if left over night. If that should be the case, then the trays are emptied of their contents about four or four and a half hours after the last stirring and the rice spread thinly on mats to cool. Should it on the other hand be deemed safe to leave it in the trays over night, these are emptied early the following morning, and when the mass has been cooled on the mats so as to check the further development of the fungus it is *koji*.

In the event the rice is moistened before it is put on the trays and left undisturbed until the morning of the third day, as mentioned above, then the mass is stirred at 5 a. m. on that day and again at 9 a. m., and should the development of the plant require a longer time still, then once more at 1 p. m., after which it is spread on mats to cool. At each stirring it is rubbed between the hands to separate grains which adhere together, and the workmen also heap it up on the trays or spread it out in thinner layers according as the temperature is to be increased or diminished. Experience is the best guide for its manipulation. No inflexible rule as to time or temperature is followed. The maximum temperature attained by the mass during the most active period of growth is about 102° to 105° F., or even a little higher at times.

There is a loss of weight during the process of from 10 to 12 per cent. of the rice employed. This is due to the evolution of carbonic acid, which circumstance in turn makes the ventilation of the room necessary in order to make it possible for the workmen to stay there. The usual plan is to insert a perpendicular flue which can be opened or closed at pleasure, so that it extends from the ceiling to the outside air, and an incline or horizontal flue which discharges fresh air near the floor.

BUILDING IN MANNHEIM.

The year 1886 was distinguished by an abnormal amount of business in the building line. This increased many fold in 1887, and in 1888, at the moment of writing, the outskirts of the city are filled with buildings in course of erection. So great has been the increase in new dwelling-houses that men shake their heads, muttering "Es muss ein krach geben" (there must come a crash). The latter part of 1887 and early part of 1888 saw a new water-works set in operation and plans projected for a complete sewer system. Electric lighting has also been introduced and is growing rapidly in favor, especially in the large establishments. Many new dwelling-houses have been erected for the working classes, but the rents are still exceedingly high. In the better classes of houses rents are higher than in most other German cities.

MOVEMENT OF BUILDING — PRINCIPAL BUILDINGS.

Dwelling-houses in 1887, 142, with 2,496 rooms; in 1886, 120, with 2,208 rooms. Dwellings, including the above rooms (or tenements), 1887, 619; in 1886, 516; among these 34 tenements torn down and rebuilt in 1887 and 30 in 1886. Magazines, factories, etc., 32 in 1887, 27 in 1886. New additions to dwelling-houses in 1887, 336; in 1886, 115, with 1,752 and 1,460 rooms, respectively; or 417 tenements for 1887 and 350 for 1886; among these 63 old tenements torn down and restored in 1887 and 48 in 1886. Workshops, magazines, stables, and shelters, 55 in 1887 and 46 in 1886, of which 14 in 1887 and 11 in 1886 were torn down and re-erected.

Changes in buildings, especially on ells or fronts, 98 in 1887 and 84 in 1886, giving 205 new dwelling-rooms to the former and 178 to the latter; or 75 new dwellings for 1887 and 67 for 1886. Changes in ells and buildings in the rear, 93 in 1887, 78 in 1886, with 127 rooms to the 1887 change and 106 to that of 1886, or 58 new tenements in the one case and 49 in the other. Increased engine-rooms, etc., in 1887, 38; 30 in 1886.

Summary of sales of real estate in Mannheim during 1886 and 1887, with amounts of revenue therefrom: It may be remarked that the city and state impose a tax upon almost every dollar paid out in such sales. During the twelve months of both years there were for 1886 325 and for 1887 364 sales effected. These sales yielded, respectively, 10,872,399 and 15,923,392 marks; taxes, 264,150.29 marks for 1886 and 383,297.67 for 1887.

The crowded condition of tenement houses has been cause for frequent and outspoken complaint. The new movement, marked by a great and rapid increase in dwelling-houses, added to the new and splendid water system and the projected underground sewerage, is going to have a beneficial effect on the city's health, comfort, and morals. Tenements must be cheaper, larger, and better than ever before, so great has the competition grown among house owners. A reaction is expected; but long ere it comes the good will have been done. Capital alone will suffer in smaller returns from real estate.

Since writing the above I have seen a table giving tax receipts from sale of real estate for the ten years ending with and including 1887.

	Marks.		Marks.
1877	144,435.69	1883	165,825.99
1878	99,460.83	1884	143,232.63
1879	100,509.05	1885	225,970.40
1880	113,796.46	1886	264,150.29
1881	132,109.16	1887	383,297.67
1882	140,216.54		

The sum realized from the sales in 1878 was, in round numbers, 4,000,000 marks; in 1887, 16,000,000. A mark equals 23.8 cents. — MANNHEIM, *May, 29, 1888.*

J. C. MONAGHAN.
Consul.

AMERICAN TRADE WITH BOHEMIA.

From time to time inquiries are received at this office from American manufacturers, or their representatives in the United States, as to the kinds of goods that could find a market here in northern Bohemia, the names of firms dealing in such articles, etc. These inquiries are difficult to answer, as there is no way of learning in advance what American manufactures would sell here, as there are scarcely any to be found in this market. Any information that a consular officer could give on the subject would, therefore, be founded either simply upon his individual surmise or the surmises of various dealers with whom he had discussed the subject, and a conscientious officer would hesitate in affording such unreliable information.

I am convinced that in many articles of American manufacture a good trade can be done in northern Bohemia, and I am equally convinced that there is only one practical method of building up such a trade. Catalogues and prices-current, whether illustrated or not, will have no effect here at present. The people are unfamiliar with our goods and will not buy without seeing them. In special cases merchants are willing to receive consignments and see what can be done in a new line, but they will take no risks themselves.

There are many articles which, in my opinion, would find a ready sale here, such as calendar clocks, fire-proof safes with combination locks, platform scales, parlor organs, hoes, shovels, axes, hatchets, and hammers—but everything must be cheap.

I have never seen a calendar clock in this neighborhood, though hundreds of large, well-equipped offices are in this consular district. Great factories lie in every direction, yet in none of them have I seen an American safe, or anything but the old-fashioned cumbersome lock that requires several keys. One or two American organs are here, but they are of inferior make and convey no idea of the beautiful tone of some of our instruments.

But how are we to introduce these manufactures and a hundred others when the merchants here show apathy in the matter and will do no more than receive consignments, while the American manufacturer contents himself with sending out price-lists. Our merchants dislike to risk consigning goods, and the merchants here dislike to risk receiving a consignment that may cause them much trouble and little or no profit. Our merchants expect to ship their goods and obtain quick returns. In building up a new trade this is impossible.

There are in the United States various commercial companies or agents representing a variety of manufactures. Let such a company, one with the largest number of connections, send an agent here who understands his business and speaks German fluently—this latter is a *sine qua non*—or let several companies combine in the employment of such an agent. This agent could soon satisfy himself as to the market, and then should have

samples of such goods as he concludes to handle forwarded to him and exhibited in a warehouse here, which can be cheaply rented.

From this, the largest city in northern Bohemia, trade can be pushed in various directions. When a sale for certain articles is established, there will be no difficulty in getting established houses to take hold of the matter.

In a year, I conclude, the agent would be able to return home, having established a good trade in a great variety of our manufactures.

This is not an agricultural section, and the sale of agricultural implements, except of the smaller kind, would amount to nothing. Great forests of pine trees surround us, and American axes should be used in felling them.

England and Germany supply the hundreds of factories with steam-engines and spinning and weaving machinery. Is it impossible for us to compete with them in this lucrative branch.

The scales used here are of the most clumsy and cumbersome character. Surely we should be able to supply these. All should be graduated in the metric system, however.

The exports to the United States from this district are large, and have doubled since my advent here, and steps should certainly be taken to supply some of the imports in a field where American manufactures are almost unknown. I shall be glad if my suggestions are found practical, and will do all in my power to aid an accredited agent of American manufactures in building up an American trade. — REICHENBERG, *June 7, 1888.*

JNO. B. HAWES,
Commercial Agent.

LIMITED STOCK COMPANIES IN MEXICO.

The law of April 7, published in the Diario Oficial of April 10, 1888, fixing the status and responsibility of stock companies in Mexico, is of special importance to those Americans who may now have or hereafter establish such companies in this country. The principal provisions are that the title must simply state the particular line of business for which they exist. For example, the Mexican Central Railway Company or the Mexican Fiber Company are *Sociedades Anónimas* within the meaning of the law. If the name of any shareholder appears in the title of the company he becomes personally responsible therefor. In an anonymous company the liability is strictly limited. Such a company may be organized in two ways; first, by public subscription; second, by two or more persons signing the articles before a notary. In the first sort the following are requisites:

1. The publication of the prospectus.
2. The subscription of the capital.
3. A general meeting to approve and ratify the constitution.
4. The notarial registration.

No company is legally constituted until the capital stock is fully subscribed and 10 per cent. paid in cash. — MATAMOROS, *May 7, 1888.*

WARNER P. SUTTON,
Consul-General.

INSPECTION OF BUTTER IN FRANCE.

The following, transmitted by Consul Dufais, is a translation of a decree of the President of the French Republic regulating the inspection of butter in France.

According to the law of March 14, 1888, concerning the repression of fraudulent dealings in the butter trade, and particularly according to Article XI, the first paragraph of which reads as follows:

"A rule of public administration shall determine the mode and the conditions of the inspection to take place, particularly for goods in transit, by the customs agents or collectors of the indirect taxes; the inspection will be free, without obstacles or delays in the forwarding of the butter."

ARTICLE 1. The clerks of the indirect taxes, those of the customs and municipal taxes, and the agents intrusted with the inspection of the halls and markets, duly commissioned and sworn, are authorized to take samples of butter for sale, for transportation, importation, or exportation, in order to examine the purity of the same. The carriers, and the directors and agents of carriers, by land or water, are bound to put no obstacles in the way when required to furnish the samples, and to show the way-bills, receipts, bills of lading, and declarations they may have in their possession. Each sample is taken subject to a special examination (*procès-verbal*).

ART. 2. When the sample is taken from a retailer, a wholesale dealer, a forwarder, a consignor, or a carrier, he must give the name and address of the owner of said merchandise. If the merchant, forwarder, consignee, or carrier will not or is unable to furnish the name and address of the party from whom he has obtained the merchandise, and also if he refuses to sign the certificate (*procès-verbal*), it is to be so mentioned in said certificate.

ART. 3. The samples taken by the agents named in Article I are to be put in pots or vases in the presence of the owners of the merchandise, hermetically closed and sealed, and sent immediately to one of the experts appointed in each department by the prefect. The circumstances are to be set forth in the certificate (*procès-verbal*).

ART. 4. Pure butter, mixed butter, margarine, oleomargarine, and grease intended for consumption, forwarded in transit, must be contained in closed packages, and the origin and nature of the merchandise must be conspicuously specified thereon. Upon arriving at the custom-house the packages are to be weighed, corded, and sealed with lead, and a certificate, to be delivered to the carrier or transportation company by land or water, shall accompany the goods until they reach the office of export. The certificate of transit fixes the delay granted for re-exportation.

The ministers of the interior, of agriculture, and of finances are charged with the execution of the present decree, so far as each is concerned.

Done at Paris, May 8th, 1888.

(Signed) CARNOT.

BANANA CULTURE IN ST. THOMAS.

The Belgian consul at St. Thomas reports that the culture of bananas in that island has greatly increased, in 1887 about 250 hectares being brought under that plant. The Government encourages this extension, offering 20 hectares to every person who will engage in it. The cost is:

	Piasters.
Clearing a hectare of land	12
Plants, per hectare (600)	2.50
Expense of planting	6
Expense of maintaining, per hectare, till the crop	24
Contingencies	5
Total	49.50

In the space of six months (counting from the fourteenth month after planting) a hectare produces 600 bunches, which represents a value of 300 piasters. The first yield over, from 80 to 100 bunches a month may be gathered. The expense of clearing the field is about 24 piasters a year, and a plantation, well cared for, will last from six to eight years.

COMPARATIVE COST OF MANUFACTURING CHEVIOTS COMPOSED OF SHODDY AND WOOL.

The use of shoddy in the manufacture of cheap "woolens" is not confined to our country alone. In England it creeps into its bedding of wool under the name of "mungo." The origin of the word, I am told, is this: When the article was first introduced the work people who were to spin it refused working it, saying, after being urged, "It won'er go;" upon which the manager answered, "It mun go," meaning "it must go." The people who work "mungo" gave me this explanation, and must, therefore, be satisfactory authority. After this instructive lesson no further difficulties seem to have been encountered, at least none are recorded.

In Germany shoddy is called *kunstwolle* (artwool), and this seems to be a very proper name, as there is far more art than wool visible when it is yet unmixed with the sprinkling of wool necessary to keep it from flying away in the spinning. I doubt, however, that the use of shoddy has anywhere made more rapid progress than in the United States. The census tables in the manufacture of woolens show—

	1870.	1880.
Number of pounds of domestic wool	154,000,000	177,000,000
Number of pounds of foreign wool	17,311,000	20,480,000
Number of pounds of woolen and worsted yarn	2,573,000	3,900,000
Pure wool	173,884,000	201,380,000
against		
Number of pounds of cotton yarn	3,263,000	3,517,000
Number of pounds of cotton warp	1,312,000	17,550,000
Number of pounds of cotton	17,571,000	24,744,000
Number of pounds of shoddy	19,372,000	46,583,000
	41,518,000	92,394,000

The total quantity of raw materials consumed was 215,000,000 pounds in 1870 and 294,000,000 in 1880, a gain of 36.5 per cent. The consumption of real wool, however, had only increased 15.8 per cent., while mixed materials, cotton and shoddy, increased 124 per cent., and shoddy alone 142 per cent.

That our manufacturers are largely driven to the manufacture of mixed goods, where they would otherwise prefer the working of the pure article had they free wool, admits of no doubt. It is always easier to make a sightly article of genuine wool, etc., than of mixed materials, surrogates, etc. Under this heading of the free raw-material question everything applies to what I have said on the subject in my previous report on the manufacture of all-wool dress goods. Goods so largely produced in America certainly invite the question, "What is the cost of production in America and what in England?" I leave here the question of the cost of material out of consideration, as it would be too perplexing. The wools, the quality of shoddy, the proportions of shoddy to wool, all vary in different fabrics and in the same fabric made in different countries. In an article, 6-4 cheviot, manufactured in America, 35 per cent. of wool and 65 per cent. of shoddy is used in the warp and in the weft. In an English article of the same class, taken for comparison, I have two accounts. One gives a pure worsted warp and a mixed weft of one-eighth wool and seven-eighths of shoddy, and the other an even mixture of warp and weft of 40 per cent. Australian wool and 60 per cent of shoddy. I shall confine myself, therefore, only to a statement of the manufacturing cost.

THE AMERICAN GOODS.

The mill account is from the month of November, 1886; the mill was working mostly on this article in that month. It also produces the all-wool kerseys described in my report on that subject. The month's account shows a product of 31,718 yards, at the following cost:

	Total.	Finished yard. Cents.
1. *Pickering	$377.02	1.19
2. Scouring and dyeing	406.75	1.28
3. Carding	585.85	1.85
4. Spinning	720.56	2.27
5. Warping	304.36	.96
6. Weaving	2,736.68	8.62
7. Finishing	1,116.69	3.36
8. Office expenses 9. Superintendence, etc.	891.84	2.81
10. Repairs, etc	380.34	1.20
	7,520.09	23.54

The scouring and dyeing is done by the same set of men. The goods contained in this description are dyed in the piece, and are equally assorted in black, brown, and blue. The blue is indigo blue, and the cost of dyeing

*The pickering is the expense of preparing the shoddy from the rags. The labor-cost is 0.25 cent per yard; the balance for incidentals, supplies, etc.

materials is thereby correspondingly increased. The cost of dye-stuffs, scouring materials, coal, etc., is 7 cents per yard of goods. In the carding, 1 gallon of oil per 100 pounds carded is included at an expense of 0.40 cent per pound. The weaving wages contain the auxiliary expenses. The latter are day wages, and receive $19 per day, or per month of (November) twenty-five working-days, $475. On 31,738 yards this is per yard 1.5 cent, and leaves for direct weaving wages 7.12 cents per yard for all goods woven. The yard price for weaving these goods given me by the manufacturer is, however, only 7 cents. The 7.12 cents stand for the monthly average, and includes goods paid at a somewhat higher rate, which form a smaller proportion of the output, like the kerseys described below, and for which 8 cents is paid as the direct weaving price rate per yard.

The other items need no further explanation. They are accounted for in the kersey account and divide in the same ratio per yard. The only difference is in the expense of preparing the shoddy, which, of course, is not charged in the all-wool goods. Every other manipulation requires the same labor. If anything, rather more than less labor is required in the handling and manufacturing of shoddy goods than in all-wool goods.

THE ENGLISH COST.

The English goods taken for comparison are 40 per cent. wool and 60 per cent. shoddy, and of about the same count or number of picks per inch as the American goods.

The cost is:

	Cents.
1. For preparing the mungo from the rags per yard, labor, including expenses and scouring	2
2. For carding, including expense	3.6
3. For spinning	1.8
4. For warping, beaming, etc	2
5. For weaving	5
6. For scouring and milling	2
7. For dyeing ordinary colors, 3*d.*; indigo, 6*d.*: ⅔ ordinary colors, 2*d.*; ⅓ indigo, 2*d.*	8
8. For finishing	2
9. For incidental and general expense	.8
10. For coal, oil, etc	1.2
11. For rent, taxes, insurance	1.6
Total	30

Comparative cost-statement.

	America.			England.		
	Labor.	Incidentals and supplies.	Total.	Labor.	General expense, incidentals, and supplies.	Total.
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
1. Pickering and preparing wool	.25	.94	1.19	4	3.4	2
2. Carding	1.45	.40	1.85			3.6
3. Spinning*	2.27	.....	2.27			1.8
4. Warping, etc	.96	.....	.96	.75	1.25	2
5. Weaving	7	.....	7	4.4	....	4.4
5. Additional	1.50	.....	1.50	.6	.....	.6
6. Finishing expense	3.36	.....	3.36	*2	2	4
7. Dyeing and scouring	1.28	7	8.28	†1	7	8
8. Office expenses, etc	.....	2.81	2.81	.....	.8	.8
9. Repairs, etc	.....	1.20	1.26	.....	1.6	1.6
Rent, taxes, insurance, coal, oil, etc	.....	.....	.....	.....	1.2	1.2
Total	18.07	12.35	30.42	12.75	17.25	30

*No. 6 and 8 of English account.

† Dyeing expense only. Scouring for English contained in No. 1.

The sum total of the manufacturing cost is about the same in both countries, but rent, taxes, and insurance would have to be added to the American cost. On the other hand the American office expense is given at a higher rate than the English, as the former contains the superintendent's salary at the rate of 1½ cents per yard, which is not the case with the latter. The superintendent in this case was the principal owner and stockholder. This, however, is made up again in the middle column of the English account in collective charges for 1, 2, and 3. The American account in the middle column, No. 7, contains coal, etc., for the general mill supply other than what is used for dyeing alone.

The principal and perhaps only difference in labor comes in the weaving branch again, as in all the other accounts rendered higher where only one loom is handled by one weaver. But even here is only a difference of, say 3 cents, covering all labor balances, and of 2.6 cents for weaving taken by itself. The higher charge for finishing contains many items which ought properly to go into the middle column. The difference in the earnings of weavers is, however, much greater than the difference in the labor-cost per yard between the English and the American weaver. With an output of 80 yards in this class the earnings of an English weaver are 14*s.* 8*d.* per week, or $3.52.

In the American mill during the month of November 63 weavers were employed on the output of 31,738 yards, or 482 yards each. Now allowing that they all were regularly in attendance for each and every one of the twenty-five working days of the month (deducting four Sundays and Thanksgiving day), a thing not likely to be the case among female help, then we have per week of sixty hours 116 yards against 80 yards in England

for a week of fifty-six hours, which gives 86 yards for an equivalent of American time. If the English were paid at the American rate of pay they would at their lower output earn $5.60 per week, while the American weavers earn $8.12 per week on an average, taking them good, bad, and indifferent. This difference certainly is due only to the greater efficiency of American help and to no other cause. The output in the American cheviots is even somewhat higher, as the account contains a percentage of higher paid goods (see kersey report below) than 116 yards, and may be taken as 120 yards average. Some weavers have run as high as 176 yards a week.

A New England mill making a similar class of goods, the same weave though somewhat finer in the count, pays at the rate of $1.25 for 20 yards, an average day's work, or 6¼ cents per yard.

The mill where the goods are manufactured, which I have here under review, is situated in a town farther south than New England, is not as advantageously situated as regards help and can not manufacture under the benefits naturally resulting from a congregation of all auxilaries to manufacturing in an industrial center.

MANUFACTURING COST OF ALL-WOOL KERSEY CLOTH USED FOR ARMY CLOTHING.

This is a standard cloth, and is subjected to tests by examining officers. The weight is 22-oz. pure wool, indigo dye. The latest contract price was $1.35 per yard, which leaves a margin for profit to the manufacturer.

A.—THE AMERICAN COST.

1. The wool.

The wool, so called 3-8 blood, is greasy wool and loses 50 per cent. in scouring. It costs in the grease 24 to 25 cents. The mill account takes it at the basis of 48 cents scoured. In manufacturing a further shrinkage is sustained, so that 28 ounces of scoured wool are required to produce 22 ounces of cloth. (Some return is made in the value of mill waste which I do not take into account.) The wool then stands $\frac{48 \cdot 28}{16} = 84$ cents. The scouring and dyeing is done by the same hands. The cost of scouring is, therefore, included in cost of dyeing, and will be stated below.

2 and 3. Carding and spinning.

The carding and spinning cost 4.12 cents per yard of cloth. In this the cost of what supplies may be required in the process is included. The carding costs 1.85 and the spinning 2.27 cents.

4. Weaving.

The warping costs 0.96 cents per yard and the weaving, inclusive of all additional labor expense in weaving, is 8.62 cents for the general output. The additional labor-cost is about 1½ cents per yard, leaving 7⅛ cents for

direct weavers' wages. For this cloth, however, 8 cents is the direct weavers' price per yard. The average output per weaver, good, bad, and indifferent, in this mill is 482 yards per month, or 111 yards per week. The average of wages earned per week by the weaver is a little above $8, indicating for this cloth an output of about 100 yards per week. Some receive as high as $48 per month and others below $20 for the same period. The total cost of weaving from the yarn up, including warping, is, therefore, 10.46 cents.

5. Dyeing.

The labor-cost of dyeing and scouring is 1.25 cents. Ten men do the scouring of from 1,800 to 2,000 pounds of wool and the dyeing of about 1,200 yards of cloth a day. They are paid at the following rates:

One boss dyer, at $4 a day	$4.00
Three men, at $1.33 a day	4.00
Four men, at $1.25 a day	5.00
Two men, at $1.20 a day	2.40
Total labor	15.40

or 1.25 cents per yard.

The dye-stuff, etc., for indigo dye is given as 12 cents a yard, and the coal for this amount of work as 1 cent a yard (3 tons of coal, at $4 a ton = $12). Total cost of indigo dyeing, including scouring, 14.25 cents.

6. Finishing.

The finishing expense is 3.36 cents per yard, and covers all labor and incidental expense to bringing the goods into a merchantable state ready for shipment.

7. Additional expense.

The additional expense is 2.81 cents, which includes all office expenses, superintendence, etc. Of this amount 1½ cents per yard is the compensation of the superintendent of the mill, and the balance covers sundry office expenses, clerk hire, etc. Repairs stand credited with 1.2 cents per yard, so that the total additional expense per yard amounts to 4 cents.

Total American cost.

	Cents.
1. Wool	84
2. and 3. Carding and spinning	4.12
4. Weaving	10.46
5. Dyeing and scouring	14.25
6. Finishing	3.36
7. Repairs	1.2
Additional expense	2.81
Total cost of 22-ounce all-wool kersey	120.20

In this sum neither shrinkage from wear and tear of machinery nor the profit to shareholders is included. The respective charges have to come from the difference between the contract price of $1.35 and the above net cost, which is 14.80 cents.

B. — THE ENGLISH COST.

From a mill making the same class of cloth on contract for the British Government I have obtained the following data. The English price for the goods from the manufacturer is 3*s.* 8*d.* net, or 88 cents per yard. The items, as classified above in the American cost, stand as follows:

1. The wool.

The wool is Australian of variable shrinkage. The wool costs in the yard of cloth 2*s.* 2*d.*, or 52 cents.

2 and 3. Carding and spinning.

The carding stands charged on the mill-books with 2.77 pence, or 5.54 cents. The labor-cost in this is 0.961 pence, or 1.922 cents. The spinning costs 1.634 pence, or 3.268 cents, of which directly engaged spinning labor receives 0.654 pence, or 1.308 cents. Total for carding and spinning, 8.808 cents, of which labor stands charged with 3.130 cents.

4. Weaving.

The labor of warping and beaming per yard costs 0.2 pence, or 0.4 cent; the weaving, 1.923 pence, or 3.846 cents. The additional expense on this I could not obtain. It is contained in general charges and expense.

5. The dyeing.

The dyeing is done outside. The cost per yard (indigo dye) is 6 pence, or 12 cents; of this the labor-cost is 0.7 pence, or 1.4 cents. The scouring and preparatory work on wool are, of course, done in the mill, but as we have it included with the dyeing cost in the American cost account we have to introduce it here under this heading too. The cost, including materials, etc., is 0.432 pence, or 0.864 cent. The labor-cost in this is 0.173 pence, or 0.346 cent.

6. Finishing.

The finishing expense is calculated at 1 penny, or 2 cents, a yard.

7. Additional charges.

The additional expense is 1.926 pence, or 3.852 cents, a yard. The labor-cost of this is 1.2 pence, or 2.4 cents.

After this detailed statement of cost and analysis of cost items we can now proceed to classifying and comparing the American and English account:

Comparison of manufacturing cost of kersey cloth in America and England.

Elements of cost.	America.			England.		
	Labor.	Other expenses.	Total.	Labor.	Other expenses.	Total.
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
1. Wool	.....	.....	84	.....	.....	52
2. Carding	1.85	.....	1.85	1.922	3.618	5.54
3. Spinning	2.27	.....	2.27	1.308	1.960	3.268
4. Weaving	9.50	.....	9.50	3.846	.....	3.846
4. Warping	.96	.....	.96	.4	.....	.4
5. Scouring, Dyeing	1.25	13	14.25	.346 / 1.4	..... / 10.6	.864 / 12
6. Finishing	3.36	.....	3.36	2	.....	2
7. Additional expense	2.81	.....	2.81	2.4	1.452	3.852
7. Repairs, etc	.....	1.2	1.2			
Total	22	14.2	120.20	13.622	17.630	83.770

The English goods are coarser than the American goods, and would cost less to weave. I have two qualities of English goods of the same character and class. The second quality is finer than my American sample, which stands about half-way between the two English qualities. The finer English quality costs for warping and weaving 3.4 pence, or 6.8 cents, in labor. The quality of the American sample would cost here in labor between the 4.246 cents, which I have used in the comparison, as I have deemed it best to take the account just as received in the mill, and then give all benefits of a possible doubt to the American side. If anything, the English labor account in the comparison is therefore rather under than above the cost which would cover the identical goods. The same remarks would apply to the labor in spinning.

The weekly output per weaver in the English mill for the coarser quality is 75 yards. At the rate of 1.923 pence this gives 12*s.* 2*d.*, or $2.92 weekly wages. For the finer quality only about 50 yards is the output, equal at 3 pence or 6 cents to 12*s.* 6*d.*, or $3 weekly earnings. About 65 yards would be the weekly average in the quality of which in America fully 100 yards marks the average.

In the general expense of carding and spinning in the English goods interest on capital, insurance, taxes, gas, power, repairs, and renewals are charged. Some of these are absent in the American account as mentioned above. On the other hand many general expense items—overseeing, managing expense, superintendence—are contained in the general expense in Nos. 2 and 3 of the English account which in the American account are contained in the labor column. But waiving all the considerations and taking the respective columns as they stand, we have the American labor 22 cents against the English labor-cost of 13.622 cents, or a balance of 8.378 cents, as a total of any possible difference in the manufacturing cost of the goods described and compared. With the modifications resulting from the above-stated

differences in the method of calculating the general expense charges, etc., this plus cost of the labor column would be reduced to about 6 cents per yard, *i. e.*, the English cost that much increased.

The total manufacturing cost, exclusive of the wool, stands, as presented in these columns, for America 36.02 cents and for England 31.770 cents, a difference of only 4.25 cents, and if we allow 3½ cents additional to bring the American allowances for general account up to the English calculation, then we should only have 31.770 English cost against 39.52 cents American. (In the American scouring and dyeing expense account, coal and supplies are contained for the English branches in Nos. 2 and 3 of expense charges.) While, however, in the total labor-cost, at the fullest allowance, there is only a difference of from 6 to 8 cents, in the cost of the wool a difference of 32 cents exists—52 cents in England against 84 cents in America. The cloth, according to the mill account, with the wool at the English price, would stand in America at 88.02 cents, which, under present wool duties, costs $1.2020 to manufacture.—TUNSTALL, ENGLAND, *June 27, 1888.*

J. SCHOENHOF,
Consul.

PETROLEUM IN GERMANY.

After corn and cotton, petroleum is the most important product of the United States brought into the German Empire. It may be interesting to know what oils are imported, and in what quantities. There were 88,000 barrels docked at Mannheim in 1886 and 44,838 barrels in 1887. The causes of this great decrease were in the low water in the Rhine and the cheap freights by rail from Bremen—rates reduced on the Prussian railroads to help Bremen merchants. The royal direction of the Hanoverian railroads issued orders to reduce rates on goods from Bremerhaven and Geestemunde 12 cents per 100 kilograms over some roads, on others 28 to 29 cents on the ton. On one line it made a difference of $9.50 on a load, on others $6.75, and on others $6.25.

Much as Germans may regret it, Holland holds the mouth of Germany's great river, the Rhine. Amsterdam, Antwerp, Mannheim, and in fact all the Rhine and adjacent river cities have received petroleum and many other articles of foreign import from Rotterdam. The new move, to give as much as possible of this business to Bremen, Hamburg, or other German cities is commendable, were it not so difficult and so contrary to what would seem just and natural. It seems hardly fair to introduce artificial methods in Bremen's favor when they are doomed to hurt every city on the Rhine and Main Rivers. Rotterdam, Amsterdam, and Antwerp are adapted by nature to be the receiving stations for imports destined for the Rhine country.

Imports of petroleum in barrels.

Ports.	1885.	1884.	1883.	1882.	1881.
	Barrels.	*Barrels.*	*Barrels.*	*Barrels.*	*Barrels.*
Bremen	645,305	724,965	987,798	1,162,935	99,864
Hamburg	1,006,760	1,076,930	887,518	959,952	653,787
Antwerp	830,132	992,020	830,350	805,837	962,587
Amsterdam	208,000	265,000	211,000	189,573	190,875
Rotterdam	333,102	226,515	194,736	292,690	193,234

Petroleum imported into Germany (in tons of 2,200 pounds): 1878, 417,319; 1879, 340,091; 1880, 266,655; 1881, 364,878; 1882, 342,174; 1883, 369,823; 1884, 462,544; 1885, 482,179; 1886, from June 1 to November 30, 371,338. In 1887 1,076 tests were made at Mannheim, no oil being found below test standard. The 1,076 tests resulted:

Grade Celsius.	No. of tests.	Per cent.	Grade Celsius.	No. of tests.	Per cent.
21.0°	1	.093	27.0°	13	1.202
21.5°	31	2.880	28.5°	1	.093
22.0°	222	20.632	29.0°	4	.372
22.5°	195	18.122	29.5°	4	.372
23.0°	98	9.108	30.0°	24	2.230
23.5°	55	5.111	30.5°	58	5.390
24.0°	27	2.510	31.0°	47	4.380
24.5°	68	6.320	31.5°	11	1.022
25.0°	53	4.925	32.5°	3	.278
25.5°	50	4.647	33.0°	2	.186
26.0°	53	4.925	33.5°	1	.093
26.5°	46	4.188	Under 40° (no flash)	9	.836

Standard, Atlas, and Imperial flashed at the lowest points (between 21° and 22°), and they seldom showed a higher point. The oils that ranged between 27° and 33.5° were Russian, most of which ranged between 30° and 31.5°. The oils marketed as "Astral" showed no flash under 40°. There were 44,838 barrels imported here, as follows:

Brand.	Barrels.	Per cent.
Astral	124	.276
Atlas	512	1.140
Atlantic	2,228	4.970
Chester	728	1.623
Diamond	3,650	8.140
Empire Oil Works	2,090	4.661
Germania	6,070	13.538
Imperator	418	.932
Imperial	158	.330
Komet	112	.249
Peerless	614	1.366
Perth Amboy	1,764	3.934
Phenix	112	.249
Russian oil	5,087	11,345
Standard	21,171	47,217

Most of these oils came via Antwerp and Rotterdam. In the matter of inflammability the Russian oil would be preferred, but in this alone is it better than the American. In point of light and cleanliness it is far inferior. Persons with whom I spoke doubted whether the Russian would ever be able to supplant even the present merits of the American.

During the year ending December 31, 1887, at the testing office of Dr. Bessinger, 49,050 barrels were submitted and 981 of them tested. Inflaming point at 76 minimum normal barometer stand with—

Grade Celsius.	No. of tests.	Per cent.	Grade Celsius.	No. of tests.	Per cent.
21.0°	1	0.102	24.5°	104	10.601
21.5°	25	2.548	25.0°	64	6.542
22.0°	123	12.538	25.5°	23	2.344
22.5°	202	20.591	26.0°	7	.713
23.0°	169	17.227	26.5°	6	.611
23.5°	126	12.844	27.0°	1	.102
24.0°	120	12.232	32.0°	10	1.019

This table gives the lowest inflaming point 21°, the highest 32° C.; 21° and 27° belong to American, 32° to Russian oils. Sixty-three and two-tenths per cent. of American oils have points of inflammation between 22° and 23.5°; 29.4 per cent. between the points 24° and 25°. The remainder, 7.4 per cent., is distributed over lower and higher grades.

During the previous year 72.5 fell between the points 22° and 23.5° C., and 12 per cent. between 24° and 25°. Figures for the year 1887 show a clear gain of 17 per cent. in this matter. This is explained by the fact that two very large consignments of standard gave inflammability at 24° and 25°. Such oils are very much desired by railroad and kindred corporations. It was noticed repeatedly that oil drawn in summer showed a higher inflaming point than the same brand when drawn in spring or winter.

Brands.	Number of barrels.	Per cent. off all.	Barrels testable.	Barrels tested.	Inflaming point at 76°.		Average.
					Minimum.	Maximum.	
Acme	450	0.917	450	9	21.5	23.5	22
Acme (extra standard)	950	1.937	550	19	23.5	24.5	24
Atlas	500	1.019	500	10	24.0	26.5	25.25
Germania	8,800	17.940	8,800	176	22	27	24.5
Franklin	800	1.633	800	16	23	23.5	23.5
Point Bréze	50	0.102	50	1	24	24	24
Russian petroleum	500	1.019	500	10	32	32	32
Standard	37,000	75.433	37,000	740	21	25	23
Total	49,050	100.001	49,050	981	21	32	24.75

Although the average is 24.75°, it is because Russian has been added. The best average of American is only 20.71° C. In 1886 the general average was 24.47° C; American, 23.83°. The difference is small, but still against us. The effort to bring the oil up to 25°, which seems the desirable point here, is worth making. In Bremen 809,409 barrels were

experimented on with a view to determining combustion point and color. The inflammable point is reported for the entire quantity at 21° Celsius Abel, and the color prima white for 257,531 barrels, and standard white for the rest, 551,878. Bremen, because of advantages derived from importing in tank-ships, and reduction of freight rates along railroad lines to compete with water-ways, is in a fair way of obtaining the complete upper hand in this branch of trade. — MANNHEIM, *June 2, 1888.*

J. C. MONAGHAN,
Consul.

TRADE RELATIONS BETWEEN THE UNITED STATES AND GERMANY.

In commercial circles, and even beyond the same, more anxiety than ever manifests itself to improve the trade relations between the German Empire and the United States. This may be mainly attributable to the desire of extending the markets of this country, but receives additional and rather significant force from the circumstance that the commercial *entente cordiale* between the German Empire and other European nations becomes more strained every day. It is a well-known fact that considerations, not within my prerogative to explain, have caused discriminations against American products, annoying to our interests and unfavorable to a satisfactory intercourse between the two nations. The heavy exportations from Germany to the United States are chiefly manipulated by foreign interests, while little or nothing is done by us to secure for our manufactures and products that recognition here so much demanded by the mechanical and agricultural industries of the United States. I am daily in receipt of inquiries of all kinds for the disposal of American goods, particularly our specialties. I gladly give all information within my reach; but it would prove more effective if the suggestion, frequently made, to inaugurate a permanent exhibition of our manufactures at Berlin, or some other prominent city of Germany, received attention.

The peculiar condition of affairs on this side of the Atlantic, too often influenced by matters foreign to trade interests, appears to point at the present time more pressingly than ever to the necessity of inviting and encouraging the competition of the United States, and to make the German market more independent of the conditions, commercially as well as otherwise, to which it is now subjected. It is hardly necessary to refer to the present anomalous relations between Germany and Russia, from which latter country Germany draws large amounts of grain.

GREATER EXPORTATION OF AMERICAN PRODUCTS SUGGESTED.

At all events, I deem it of great importance to open to a greater extent than has been the case heretofore the markets of the German Empire to our industries. The field is quite large, and while German manufacturers and

exporters receive great benefits from us, under our liberal invitation, it is doubtless advisable that by our action we should secure reciprocal advantages.

Permit me to quote from my last annual report:

In my opinion it would be highly advantageous for American manufacturers and importers to combine and open a permanent exhibition of American specialties at Berlin, no matter what the cost may be. Doubtless many trade connections could be established, since the flow of foreign visitors increases here every year and the political importance of the German capital attracts thousands of people.

Of course only the best of our industrial products should be exhibited. Prior, however, to any final step, the conditions and requirements of the German market should be carefully examined and considered by intelligent, experienced, and qualified men familiar with foreign languages and the wants and customs of this country.

BERLIN, *June 12, 1888.*

F. RAINE,
Consul-General.

RUSSIAN KEROSENE IN JAPAN.

The Russian consul at Nagasaki, in a dispatch dated April 23, 1888, calls the attention of the Russian merchants to the opportunity of developing a trade with Japan, and points out that a profitable business could be done by exporting Russian kerosene to that country.

He asserts that the Russian kerosene is both cheaper and better than the American, and ascribes it to the want of enterprise of Russian merchants that this important article has not been widely spread all through Japan. Whatever has been done, he says, has been done by foreigners, and 1,000 cases, containing two tins each of Russian kerosene, consigned to the bankers, Messrs. Holmes & Ringer, of Nagasaki, were sold in a few days.

The buyers were so well pleased with their purchase that they unanimously declared they would not buy American kerosene in future.

He maintains that although the kerosene had not been shipped direct, but had come from Hong-Kong, it was sold under the market price and still left a good profit to the merchants.

The consumption of kerosene in Japan in the year 1887 is said to have been —

	Cases.	
Yokohama	77,151	
Tokio	680,828	
Suruga		367,998
Mikava		
Sagami		
Ovari		

making a total of 1,125,977 cases spread over but a limited district of the country. — MOSCOW, *June 10–22, 1888.*

N. W. HORNSTADT,
Acting Consul.

EXPORTATIONS OF TEXTILES BY THE LEADING MANUFACTURING NATIONS OF EUROPE.

The following summary shows the exports of the principal textiles from Austria, Belgium, England, France, and Germany in millions of francs (1 franc = 19.3 American cents) and in the percentage of each country of the total amount. The résumé originates from the Statistical Society of Paris, and varies with the statements below in so far as in the original the amounts of each of the past five years are given while here a five years' average is taken and the aggregate value of all textiles is stated:

From—	Cotton yarns.		Woolen yarns.		Linen yarns.	
	Francs.	*Per Ct.*	*Francs.*	*Per Ct.*	*Francs.*	*Per Ct.*
Austria	2,200,000	0.5	9,300,000	3.7	19,500,000	15.5
Belgium	5,700,000	1.3	53,900,000	21.8	64,900,000	51.6
England	391,500,000	90.1	107,700,000	43.7	31,400,000	24.9
France	2,500,000	0.6	35,100,000	14.3	5,600,000	4.5
Germany	33,100,000	7.6	40,600,000	16.5	4,400,000	3.5
Total	435,000,000		246,600,000		125,800,000	

From—	Cotton goods.		Woolen goods.		Linen goods.	
	Francs.	*Per Ct.*	*Francs.*	*Per Ct.*	*Francs.*	*Per Ct.*
Austria	18,000,000	0.8	57,100,000	4.3	14,100,000	5.9
Belgium	21,300,000	1.0	28,300,000	2.1	22,500,000	9.4
England	1,829,200,000	85.5	577,600,000	43.7	163,800,000	68.2
France	93,500,000	4.4	361,100,000	27.3	18,600,000	7.7
Germany	178,600,000	8.3	299,400,000	22.6	21,400,000	8.8
Total	2,140,600,000		1,323,500,000		240,400,000	

From—	Silk goods.		Aggregate of textiles.	
	Francs.	*Per Ct.*	*Francs.*	*Per Ct.*
Austria	8,000,000	1.5	128,200,000	2.5
Belgium	700,000	0.1	197,300,000	3.9
England	70,000,000	12.9	3,171,200,000	62.7
France	258,900,000	47.6	775,400,000	15.4
Germany	205,900,000	37.9	783,400,000	15.5
Total	543,500,000		5,055,500,000	

It will be seen from these figures that England controls almost exclusively the market in cotton yarns. In the exports of woolen yarns, besides England, Belgium, France, and Germany also participate with considerable amounts. As to linen yarns, it is the Belgian industry which occupies the most prominent place; next to it are Austria and England. Considering cotton goods again, England holds a dominant position while the German and French shares appear insignificant. In woolen goods the differences are less conspicuous. Besides England, France and Germany also share with large amounts. Again,

England supplies the bulk of linen goods, while the other countries participate with comparatively small amounts. France exports most of silk goods; second to it comes Germany, while England is far behind. Of the total amount of all textiles England exports about three-fifths, Germany and France each one-sixth to one-seventh, and Austria and Belgium the remainder. — GERA, *April 14, 1888.*

CHARLES NEUER,
Consular Agent.

PROTECTION OF LIFE AND PROPERTY IN PERSIA.

[TRANSLATION OF FIRMAN OF HIS IMPERIAL MAJESTY THE SHAH. — TRANSMITTED BY MINISTER PRATT.]

Being, by the will of Almighty God, at the head of justice in my country, and by His will the lives and property of this people having been intrusted to my keeping, I have deemed it my duty, in praise of the God all-powerful, and in recognition of His munificence, to hinder those who would lay hands upon this trust to me confided, and to do all that lies within my power in order that my subjects may be secured in the enjoyment of life and property, so that tranquilly and in peace they may engage in all pursuits tending in the direction of civilization and acquirement of fortune.

This firman is proclaimed to the whole of Persia in order that all the people may know that the present edict accords to them the protection of life and property, with full liberty to dispose of what is theirs, and the right to acquire wealth, to form companies, to establish manufactures, to make roads, and indeed to do all things tending to promote civilization and their own and the public welfare.

To see these ends accomplished will cause me great personal satisfaction; also, I am ready to do you justice, and stand myself as guarantor for the security of your interests.

No one in Persia shall have the right to lay hands upon you, to confiscate what is yours, nor to punish you without recourse to the divine or common law of the land.

Dated 14 Ramazan, 1305 A. H.
(26 May, 1888 A. D.)

CAMMEROON TOBACCO.

This tobacco is the first production of the "Kamerunland und Plantagen Gesellschaft," Woermann, Thormäklen & Co., in the German colony of Kamerun (Cammeroon), Africa; it has just been received in the market here, and as a wrapper for cigars it is regarded as fully equal if not superior to the Dutch Sumatra tobacco.

It is expected that this Kamerun tobacco will develop immensely and seriously compete with Sumatra tobacco in the future, it being equally as good and much cheaper.

The price paid here for this Kamerun tobacco was 4 marks 10 pfennigs per kilogram = 50 cents per pound — Sumatra tobacco of similar grade costing from 88 to 95 cents per pound.

The tobacco merchants of Bremen are so well pleased with Kamerun tobacco that companies are being formed, and much capital is being invested in its cultivation. As the United States are large purchasers of Sumatra tobacco it is of great interest to watch the progress of the cultivation and development of this Kamerun tobacco. — BREMEN, *June 26, 1888.*

ALBERT LOENING,
Consul.

TAXATION IN CUBA.

In discussing a speech of Mr. Montoro in the Spanish courts, the Tarde of Havana said on June 18, 1888:

"No civilized people pay more than 16 per cent. tax upon the total value of its productions; the island of Cuba pays 60 per cent. Spain itself, with a population of 16,000,000 inhabitants, has a budget of $160,000,000. Cuba, with 1,500,000 inhabitants, has one of $25,000,000. Let our readers answer if economic prosperity is possible in any country under such conditions.

"Those who live upon the budget and are not manufacturers or proprietors, and consequently do not suffer the consequences of an onerous taxation such as overwhelms us, attempt to demonstrate the reason of our present evils and attribute them to other causes, when in reality they are the same that bring the people to the pitch of exasperation in all countries. That is to say, economic decay is the cause of political troubles. It is proved that prosperity is the opponent of revolution."

Let us see how Mr. Montoro explains himself:

"In discussing this budget for Cuba the first questions to be asked are, does the condition of production in the island permit this burden of $25,000,000? To answer this question with certainty there is no rule that is universally followed; but there are two that I shall adopt. One of them imposes taxes in proportion to the total production of all the sources of wealth; the other in proportion to the number of inhabitants. By this last rule, when applied to this budget, each inhabitant of Cuba pays the Government 85 pesetas ($17), an exorbitant amount when it is known that the average of other countries is from 48 to 50 pesetas, or from $9.60 to $10 per inhabitant.

"By the other rule, that which determines the imposition of taxes in accordance with the total production, this budget shows that Cuba pays from 50 to 60 per cent. of her production. According to the most approved calculations the per capita tax in other countries on the same rule is 14 per cent. With such burdens how can you believe it possible for Cuba to maintain her wealth and prosperity. Cuba needs no protection; like all countries having a great staple production and with great competition to contend against, she desires to have her hands free that she may work freely. Cuba produces largely of tobacco against great competition, as also largely of sugar against the competition of the beet-root sugar of Europe, and, therefore, needs free trade in matters of industry like England."

Mr. Montoro does not believe that the establishment of direct taxation was in any way the cause of the Cuban insurrection. In answer to some objection raised by Mr. Martinez Longoria, Mr. Montoro replied that the insurrection should have been carried on under the flag of "Down with the taxes." He expressed a desire to suppress the duty on the exportation of tobacco — a prejudicial tax by the very manner in which it is established, because the inferior article pays the same tax as the best quality. He also advocated the suppression, or at least the reduction, of the excise duty in Cuba upon live cattle, as asked for by the people; for this tax, from its tendency and form under which it is established, is ruinous to the cattle trade. On the other hand he considers the tax on liquors as a productive one, but would exempt the common beverages. He censured the intention of the Government to differential duties, a thing impossible after the special convention with the United States. Mr. Montoro finished his speech with a pitiable picture of the island of Cuba, where a crisis is not only inevitable but must become worse by delay, through the debilitation and enervation of her productive forces, giving rise to new economic troubles.

Your committte are of opinion that the reasons urged against treating the post-office as a commercial business are not applicable in anything like the same degree to the telegraph department, and that the increasing annual deficit in the accounts of the latter can not be viewed otherwise than with grave concern.

Looking to the increasing costliness of the service as a whole, and to the constant pressure upon it of demands for increased and unprofitable expenditure, your committee deem it their duty to call attention to the fact that the department of the postmaster-general, in all its branches, is a vast government business, which is most likely to continue to be conducted satisfactorily, if it should also continue to be conducted with a view to a profit, as one of the revenue-yielding departments of the state. Excessive expenditure appears to your committee to be sooner or later inevitable in a great government business which is not administered with a view to an ultimate profit to the state.

Your committee are fully alive to the fact that in all its branches the general post-office can not from time to time escape the necessity of unremunerative outlay. But this consideration appears to them to constitute an additional reason for keeping in mind the necessity of working in the main upon business principles, and with a view to a profit on the transactions of each year. They are disposed to believe that the high business character of the post-office department is in no small degree due to the fact that it has been administered in this spirit and from this point of view; and they are satisfied that it will most certainly preserve that character by being permitted to be guided by the same principles in its future policy and action.—*Report of Select Committee on Revenue Departments Estimates* (*United Kingdom*), *July 11, 1888.*

MANCHESTER SHIP-CANAL.

The densely populated manufacturing district of which Manchester is the metropolis is on the eve of undergoing a great change, the importance of which it is impossible to estimate. The ship-canal, concerning the promotion of which the Department has been informed, is now in course of construction. In four years a population of more than 7,000,000 (one-fifth of the whole population of the United Kingdom) will have a nearer ocean steamer port than they now possess.

The important district which will be affected by the ship-canal embraces more than 150 industrial towns, 100 of which have a population exceeding 10,000, the population of 11 of these exceeding 100,000.

A cheaper means for the transportation of merchandise will be afforded to and from most of the manufacturing towns of Lancashire, Yorkshire, Cheshire, Derbyshire, and Staffordshire. Manchester will be the nearest port for the whole of the cotton trade, the Cheshire salt trade, the main portions of the Lancashire and South Yorkshire coal-fields, the Staffordshire pottery and iron trades, and a great portion of the important Lancashire chemical trade.

The ship-canal is to be constructed nearly twice the width of the Suez Canal, with 26 feet depth of water, and the sills of the entrance locks will be 11 feet below the deepest dock sills in Liverpool and in sufficiently deep water to be worked at all stages of the tide, so that vessels will be able to continue their voyage when once in the river Mersey, instead of having to wait for high tide, as is now necessary for vessels docking at Liverpool. A vessel crossing the Mersey Bar at high water has now to wait in the river until high water of the next tide before she can dock, so that such a vessel

will actually reach Manchester before she could dock at Liverpool. Assuming that the canal is only navigated at the rate of 5 miles an hour, the distance (35 miles) would be covered in less time than it now takes to carry goods from the Liverpool docks to Manchester.

The great trade of the Manchester district is, of course, in textiles, and it has been ascertained that about 1,500,000 tons of manufactured goods leave the district yearly, about two-thirds of the quantity going to foreign countries. But in speaking of Manchester as the metropolis of the cotton trade, it is often forgotten that the very magnitude of the staple trade involves the establishment of other great industries more or less dependent upon it. Thus we find that Salford, which is practically a part of Manchester, has the largest cattle market in the world, and Manchester the largest fruit and vegetable market. The Grocery Exchange of Manchester is unique. Here, every Tuesday, the grocers from the many towns which are so thickly studded within 20 or 30 miles of the city assemble to meet representatives from the wholesale houses, purchasing from samples their supplies of sugar, coffee, canned goods, tea, soap, dried fruits, and the hundred other commodities which constitute their stock-in-trade, and many of which are the products of the United States.

The cotton, provisions, corn, timber, and most of the other articles which form important items of the commerce of this great center are now stored at the outports, principally at Liverpool, and to no slight extent at Hull, Grimsby, Goole, Fleetwood, and West Hartlepool. It is obvious that the construction of the canal will cause great changes, and perhaps no more favorable opportunity has ever presented itself to American traders to increase their English trade and to get into more direct relations with merchants and consumers here. It is, indeed, quite probable that the canal will be as advantageous to our producers, if they act promptly, as it will be to the consumers here. Take, for instance, the immense cotton trade of the district, in which our Southern States have so great a stake—the spinner will come directly into contact with the shipper.

Direct importations of cotton have increased to a very large extent during the past few years, and it was shown during the parliamentary inquiry upon the ship-canal bill that at least one-third of the imports came through to spinners without the intervention of the Liverpool market. These purchases, however, are still made principally from merchants residing in Liverpool, or from representatives of American merchants there; but American houses will do well to see that they are speedily represented here in Manchester, where every spinner comes to sell his yarn and where many already purchase their cotton. A cotton market entirely separate from the general exchange (which is too crowded for the purpose) is to be established here.

Again, this district depends almost entirely for its food supply upon other parts of the United Kingdom or upon foreign countries, and must of necessity purchase from beyond its borders a far greater proportion per head of the population than its share as estimated by the needs of other populations

as great. There is a considerable grain market here, and the merchants meet once a week, but at present there is very little direct import trade done at the Grain Exchange, the cargoes being purchased from Liverpool, London, and Hull merchants who are represented here.

TRAFFIC IN AMERICAN PRODUCTS AS PROVED BEFORE THE PARLIAMENTARY COMMITTEE.

Before an act could be obtained for the construction of the ship-canal it was, amongst other things, necessary to prove that the traffic was sufficient to justify the construction of so great a work; and it may be of interest to merchants if I name some of the figures established in spite of the most able opposition, for the scheme was opposed by all the railway companies and by the enormous influence brought to bear by Liverpool. The articles I name are selected by me as being articles in which trade exists with America, and I give for comparison the total import of the same traffic into the United Kingdom for the year 1883, that being the year given for comparison in Parliament, the quantity proved as likely to use the ship-canal, the export from the United States to all countries in 1887, and the export from the United States to the United Kingdom for 1887.

Articles.	Imports into the United Kingdom, 1883.	Quantity proved as likely to use the ship-canal.	Exports from United States to United Kingdom in 1887.	Total exports from the United States in 1887.
	Tons.	*Tons.*	*Tons.*	*Tons.*
Bacon and hams	184,799	126,772	20,321	209,961
Other meat and fish	225,169		.....	.....
Butter and butterine	116,723		2,076	6,265
Cheese	89,985		36,315	40,627
Cereals and their products, including cattle-feeding grain	7,942,367	949,100	*60,014,589	*142,279,201
Oil-cake	256,683	20,946	249,555	311,147
Tobacco	26,605	.....	†36,543	†146,833
Cotton, waste, and yarn	782,186	601,408	676,689	1,084,728
Dye-woods, dye-stuffs, tanning materials, and drugs	307,609	25,413	.....	.....
Gum and resin	88,079	6,611	‡468,816	‡1,365,012
Hides, skins, and leather	93,198	9,090	§11,360	§15,265
Manures and phosphates	499,173	20,642	172,456	220,792
Metals	599,858	.....	.....	.....
Minerals	4,516,009	194,753	.....	.....
Petroleum	302,258	31,971	‖71,627,212	‖480,845,811
Other oils	163,380	22,836	‖283,094	‖4,186,978
Seeds and nuts for extracting oil	1,017,219	32,675	¶5,573	¶5,612
Tallow	51,913	9,476	16,978	31,639
Timber	6,734,765	285,013	£1,389,086	£2,674,665

*Bushels; includes wheat and corn only. †Leaf only. ‡Resin only. §Sole leather only.
‖Gallons; cotton-seed and linseed oil only. ¶Cotton seed only.

The evidence given before Parliament to justify the above figures is too voluminous to have a place here; but in addition to the six parliamentary inquiries a consultative committee of the leading business men in the district

was formed, and after a prolonged inquiry they issued a report, paragraphs from which I quote, as follows:

We have undertaken this inquiry under a strong sense of public duty, and with the sole desire and aim of arriving at a correct judgment upon the merits of a scheme the failure of which, supposing it to be commercially sound, would manifestly be a public calamity. Our committee is composed of business men, representing various interests, who pretend to no authority beyond such as they may derive from their personal knowledge of the trade and commerce of the district, and who have endeavored honestly and impartially to judge of the practicability and commercial prospects of the scheme. We believe we are correct in stating that not one of the members forming the committee entered upon the inquiry with his mind made up, and we are sure that many of them did so with opinions adverse rather than favorable to the commercial prospects of the scheme. We have examined it with all care and with the constant endeavor to discover its weak points, and with this object we have made it our business to ascertain and inquire into the objections brought against the scheme. If, in the result, we have been led with unanimity to conclusions far more favorable to the project than we could have anticipated, it is, we believe, only because a similarly-exhausted inquiry would produce the same effect upon the minds of others who might undertake it. In presenting our conclusions we have, at the same time, summarized some of the grounds upon which they are based. It is no part of our object to absolve the public, by whose support alone the scheme can be carried out, from the duty of personal investigation. We merely desire to record our own conclusions, after a most careful inquiry extending over about five weeks and carried on almost from day to day in sittings usually of many hours.

Our conclusions are: That the ship-canal and works are practicable from an engineering point of view, and would permit vessels of the largest class to be safely navigated to and from Manchester; that the capital powers of the company under their acts of Parliament, amounting to £9,812,000, are sufficient for all the purposes contemplated by their acts; that the estimate of £104,200 per annum for the expenses of the working and maintenance is ample — there would probably be a material saving on this item during the first few years after completion; that the project is a thoroughly sound commercial undertaking, and would speedily become remunerative on the completion of the works; that a large amount of traffic would be at once secured, and that thereafter the increase in traffic and revenue must be steady and continuous.

The total charges at present paid for bringing some of the principal articles from a vessel in the Liverpool docks to the railway station or Bridgewater Canal wharf at Manchester are now (although the railway and canal rates have lately been reduced) as follows:

	Per ton. s.	d.
Cotton	13	8
Wool	16	5
Sugar (loaves)	17	11
Sugar (unrefined)	12	2
Bacon and hams	15	0
Tea	18	2
Wheat in sacks	9	11
Fruit (oranges)	15	0
Petroleum	14	5
Tallow	13	6
Iron ore	6	11
Timber	9	5

On such cargo brought direct to the Manchester docks by the ship-canal the whole of the amounts above mentioned would be available for division between the ship-canal company and

the owner of the cargo, and would, after providing remunerative rates for the canal company, leave a saving for the owner of the cargo of at least 50 per cent. of the existing charges. There would be similar savings on outward-bound cargo.

The importance of such savings in these days of fierce competition and narrow margins to the trades of the district, the very existence of many of which, now that the rate of carriage bears so disproportionate a relation to the cost of most commodities, depends on cheap carriage, can not be overrated.

Our estimate of traffic and revenue is not based on any of the statements in the prospectus. After investigating these statements very fully we have arrived at our conclusions on an independent basis. Including local, coastwise, and heavy traffic, some of which will, we believe, be at once obtained, and also including considerable quantities of traffic which would be new to the district, we are of opinion that during the second year after the canal and docks are open for traffic there is a reasonable prospect of securing along the whole length of 35 miles of canal 4,428,532 tons, yielding a gross income of £794,173. We deduct 25 per cent. for contingencies, say £198,543, leaving £595,630. We add the Bridgewater Canal net revenue, £60,000, making the revenue £655,630, from which we deduct interest on £1,800,000 debentures, £72,000, working expenses (which we consider to be overestimated) £104,200, making £176,200, and we thus arrive at a net revenue for the second year of £479,430. This sum, which we consider a safe estimate, would be sufficient to pay a 5 per cent. dividend upon the whole share capital of the company (£8,000,000) and to leave a surplus of £79,430. Our estimate of traffic and revenue for subsequent years is much larger, and points to the undertaking becoming increasingly remunerative under capable administration.

In accordance with the recommendation of the committee, from whose report I have just quoted, the necessary capital was subscribed for and the construction of the canal is now rapidly proceeding.

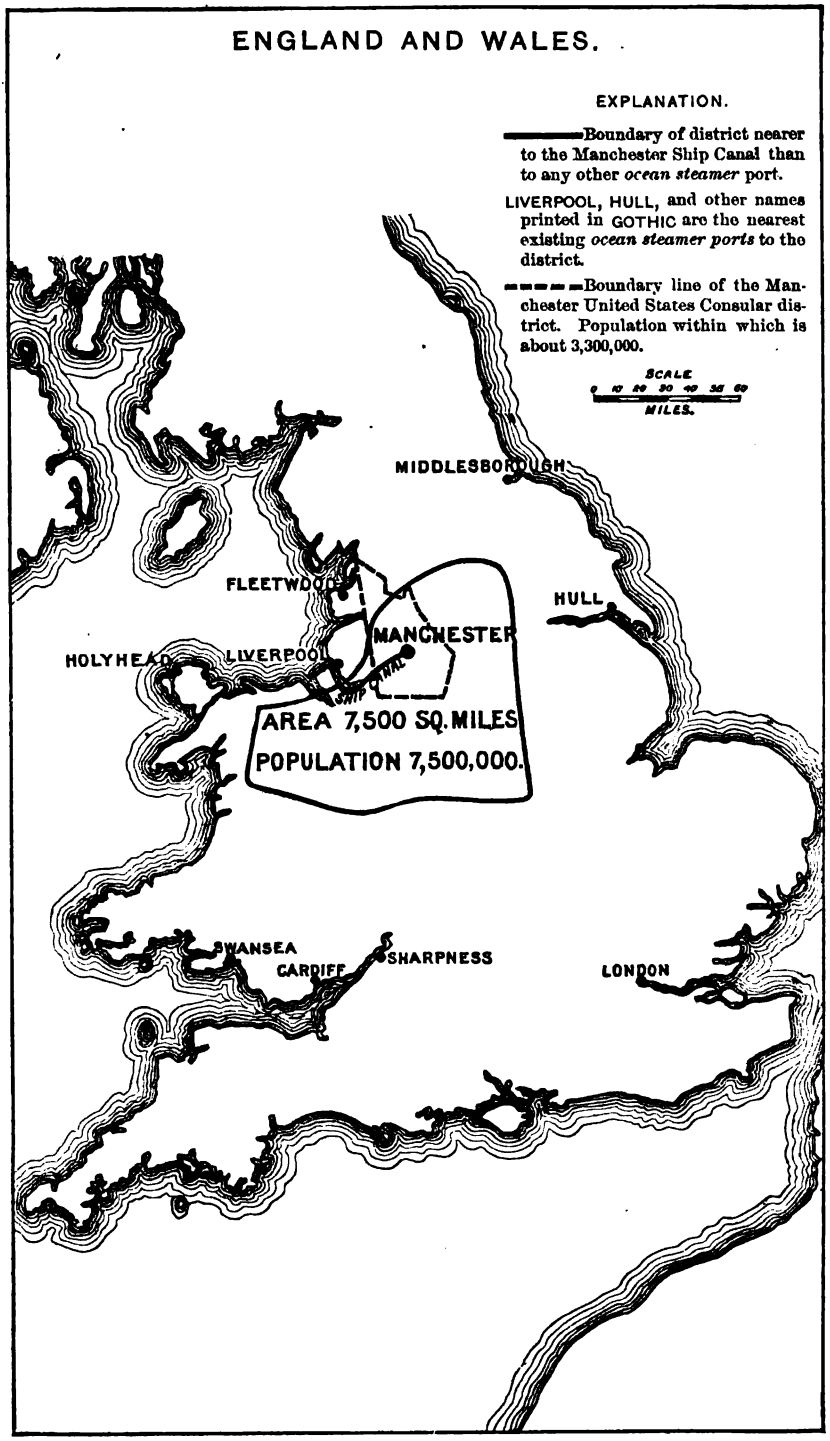
The chairman of the Manchester Ship-Canal Company is Lord Egerton, of Tatton, and the deputy chairman Sir Joseph C. Lee, so well known as the chairman of the successful Manchester exhibition of the past year (1887), and I am authorized by them to state that the company will gladly assist traders anxious to extend their trade with any necessary information and assistance.

The construction of this new water-way is likely to so materially affect the interests of a large body of American producers and merchants that it seems of far too much importance to be dismissed by me in this general report. The character of the works will also prove interesting to American engineers in view of similar developments at home, and I therefore propose to send from time to time separate reports dealing with matters especially affected by the influence of this great enterprise.

THE MANCHESTER DISTRICT.

My impressions of the importance of this city on commencing my consulship in Manchester have been considerably changed by the opportunities for observation which have since presented themselves. I find that Manchester, as a factor in the English commonwealth, is of much greater importance than I had anticipated, and I think I may safely say that—outside of certain great manufacturing and commercial centers in my own country, where competition with Manchester or dealings with it have imparted a correct estimate of its greatness—its relative position among the cities of the Kingdom is alto-

EXHIBIT No. 1.


ENGLAND AND WALES.
EXPLANATION.
Boundary of district nearer to the Manchester Ship Canal than to any other *ocean steamer* port.
LIVERPOOL, HULL, and other names printed in GOTHIC are the nearest existing *ocean steamer ports* to the district.
Boundary line of the Manchester United States Consular district. Population within which is about 3,300,000.
SCALE
MILES.
MIDDLESBOROUGH
FLEETWOOD
HULL
MANCHESTER
HOLYHEAD
LIVERPOOL
SHIP CANAL
AREA 7,500 SQ. MILES
POPULATION 7,500,000.
SWANSEA
CARDIFF
SHARPNESS
LONDON

gether misunderstood. As a matter of fact Manchester ranks next in precedence to London, and far excels the other cities in the magnitude of its interests.

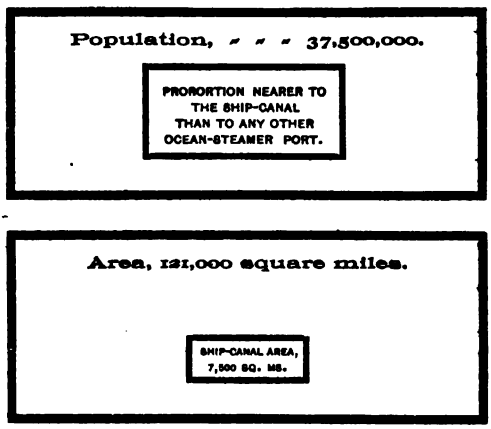
In my general report upon the Manchester Ship-Canal undertaking I stated that more than 150 industrial towns would be affected by that great enterprise. Exhibit No. 1 is a map upon which the area is indicated with which these industrial towns are comprised, the boundary of which area includes 7,500 square miles. This is equal to one-sixteenth of the entire area of the United Kingdom.

The population inhabiting this area is quite 7,500,000, representing about one-fifth of the total population of the United Kingdom. The principle upon which the boundary line of this area has been fixed is the illustration of the mean distance between the nearest ocean-steamer ports now existing and the ship-canal which is now in course of construction. A glance at this map will show that the most remote point from the canal in any part of the area is quite as near to the ship-canal as to any of the ports named on the map which are the existing ocean-steamer ports.

A further important feature is the fact that the majority of the most important places are almost immediately proximate to the canal; and the comparative importance of this ship-canal district is still further forcibly illustrated by the annexed diagram:

[Exhibit No. 2.]

UNITED KINGDOM.


Population, - - - 37,500,000.
PROPORTION NEARER TO THE SHIP-CANAL THAN TO ANY OTHER OCEAN-STEAMER PORT.
Area, 121,000 square miles.
SHIP-CANAL AREA, 7,500 SQ. MS.

I have delineated upon the map the boundary of my consular district, which, as already stated in a former report upon emigration, embraces a population of about 3,300,000.

Within the ship-canal area there are 151 industrial towns. One hundred of these towns have each a population exceeding 10,000; fifty-two of them range from 10,000 to 20,000; twenty-nine from 20,000 to 50,000; eight from 50,000 to 100,000; and eleven exceed 100,000, including this city and its contiguous suburbs, with a population at the present time of 850,000.

The following memorandum contains a list of the industrial towns referred to, giving the population according to the census emuneration for 1881. The memorandum also describes the individual industries which specially characterize the various towns named:

Towns with populations between 10,000 and 20,000.

Towns.	Population.	Characteristic Industries.
*Atherton	12,602	Cotton, iron, and coal.
*Bradford (Lanc.)	16,113	Cotton and coal.
*Bollington	10,424	Agriculture.
Bridgeworth	15,270	Carpeting.
Cannock	17,127	Coal.
Chesterfield	12,221	Lace and minerals.
*Clitheroe	10,177	Cotton.
Congleton	11,116	Silk and cotton.
*Colne	11,970	Cotton and minerals.
Chapel-en-le-Frith	10,383	Cotton, paper, and minerals.
*Chorley (Lanc.)	19,472	Cotton.
*Dukinfield	16,493	Cotton, machinery, and coal.
*Glossop	19,574	Cotton, woolen, and paper.
*Halliwell	14,012	Cotton.
*Haslingden	14,333	Cotton, woolen, and minerals.
*Hindley	14,667	Cotton and coal.
Ilkeston	14,119	Hosiery, lace, and iron.
Kirkstall	19,136	Woolen.
Leek	12,865	Pottery.
*Littleborough	10,405	Cotton.
Lockwood	14,742	Woolen and machinery.
Loughborough	14,733	Hosiery.
Market Drayton	14,849	Paper, leather, and malt.
*Middleton	18,952	Cotton.
*Mossley	13,372	Cotton.
Newcastle	17,506	Silk, cotton, paper, and coal.
Newport (Shpr.)	15,346	Coal, iron, and malt.
*Newton	10,580	Iron, chemicals, and glass.
*Northwich	12,246	Salt.
*Oswaldtwistle	12,206	Cotton.
*Padiham	13,985	Cotton.
*Pemberton	13,673	Cotton and coal.
Pudsey	15,549	Woolen and minerals.
*Radcliffe	16,263	Cotton.
*Rawtenstall	12,571	Cotton and woolen.
*Rossendale	16,120	Cotton.
Runcorn	15,133	Minerals.
*Royton	11,433	Cotton.
Shiffnal	12,821	Paper, iron, and coal.
Stoke	19,263	Pottery.
Shipley	15,089	Woolen and paper.
Stafford	19,901	Leather and brewing.
Sowerby	16,844	Worsted and machinery.
Tamworth	14,098	Small wares and paper.
Tunstall	14,244	Pottery and minerals.
Uttoxeter	14,098	Malt, cheese, and wool.
Wenlock	19,474	Iron.
*Wardleworth	19,711	Flannels.
Wem	10,565	Malt and leather.
*Whitchurch	11,246	Malt and leather.
Wrexham	10,928	Woolen, leather, and brewing.
*Whitworth	11,101	Cotton.

*Towns so marked are within the Manchester consular district.

Towns with populations between 20,000 and 50,000.

Towns.	Population.	Characteristic industries.
*Accrington	31,435	Cotton.
*Altrincham	32,609	Agricultural.
*Ashton	43,389	Cotton, machinery, and coal.
*Bacup	25,033	Cotton and machinery.
Barnsley	29,789	Linen, machinery, and coal.
Batley	27,514	Woolens.
Bingley	20,703	Worsted and machinery.
Bilston	22,730	Ironmongery and coal.
Burslem	26,521	Pottery.
Burton	39,285	Brewing.
Cheadle	22,724	Small wares, machinery, and coal.
Chester	40,342	Lead, iron, and cheese.
Crewe	24,732	Locomotives and railway plant.
Dewsbury	29,617	Woolens.
Dudley	46,223	Iron, coal, and glass.
*Farnworth	20,701	Cotton.
*Heywood	23,050	Cotton and machinery.
*Hyde	28,629	Cotton and machinery.
Keighley	25,245	Worsted and machinery.
*Newton Heath	29,188	Cotton.
*Over Darwen	29,747	Cotton.
Rotherham	34,782	Machinery and chemicals.
*Saddleworth	22,300	Cotton, woolen, and minerals.
Shrewsbury	26,478	Flannels and linen.
*Stalybridge	39,671	Cotton.
Wakefield	30,573	Wool, machinery, and corn.
*Warrington	45,257	Wire, soap, chemicals, and machinery.
Wednesbury	24,564	Railway plant, coal, and iron.
*Wigan	48,196	Cotton, machinery, and coal.

Towns with populations between 50,000 and 100,000.

*Bury	51,582	Cotton, woolen, and machinery.
Bramley	54,931	Woolen and minerals.
Halifax	73,633	Woolen, cotton, and machinery.
Huddersfield	87,146	Woolen, fancy goods, and machinery.
*Rochdale	68,865	Cotton, woolen, and machinery.
*Stockport	59,544	Cotton and hats.
West Bromwich	56,299	Coal and iron.
Walsall	58,808	Ironmongery, coal, and machinery.

Towns with populations exceeding 100,000.

*Manchester and Salford	782,630	Cotton, machinery, locomotives, railway plant, steam-boilers, silk, linen, carpets, chemicals, paper, glass, grain, sugar, provisions, fish, cattle, hides and skins, vegetables, and fruit.
*Bolton	105,973	Cotton, bleaching, and machinery.
*Blackburn	100,618	Cotton and machinery.
Bradford	180,459	Worsted, machinery, and dyeing.
Leeds	309,126	Woolen, linen, machinery, chemicals, pottery, and coal.
Leicester	122,351	Hosiery, shoes, machinery, and elastic webbing.
Nottingham	111,631	Lace, hosiery, and machinery.
*Oldham	152,511	Cotton and machinery.
Sheffield	284,410	Cutlery and machinery.
Wolverhampton	164,303	Coal, ironmongery, and hollow-ware.

* Towns so marked are within the Manchester consular district.

The population figures given in the foregoing memorandum should be increased by about 14 per cent. in order to obtain the present population.

With regard to the potential future of the Manchester district, it should be borne in mind that the population of Lancashire doubles about every thirty years.

The exhibit (No. 3) shows the general distribution of population around Manchester and the proximity of a much greater proportion of this extensive population to Manchester than to any other port. The triangle traced on the map formed by Stockport, Preston, and Leeds contains a greater manufacturing population than any one of equal size in the world.

As to density of population: In Belgium and Holland, usually considered to be the most densely populated countries in Europe, the average in 1884 was 416 persons to the square mile. The average density of the population of the United Kingdom is, in 1888, about 310 per square mile. Deducting the population and area within the triangle, the average density per square mile of the rest of the United Kingdom is 280 inhabitants. The density of the population within the triangle is 8,414 per square mile. Therefore the density of this population is thirteen times as great as the density per square mile in Belgium and Holland and nineteen times as great as that in the rest of the area of the United Kingdom.

The area of the triangle in Exhibit No. 3 is only 713 square miles, whilst the ship-canal area, in Exhibit No. 1, is about 7,500 square miles. In a small radius the population is greater around London than around Manchester, but taking an extended radius of 45 miles the population exceeds that of London by 500,000.

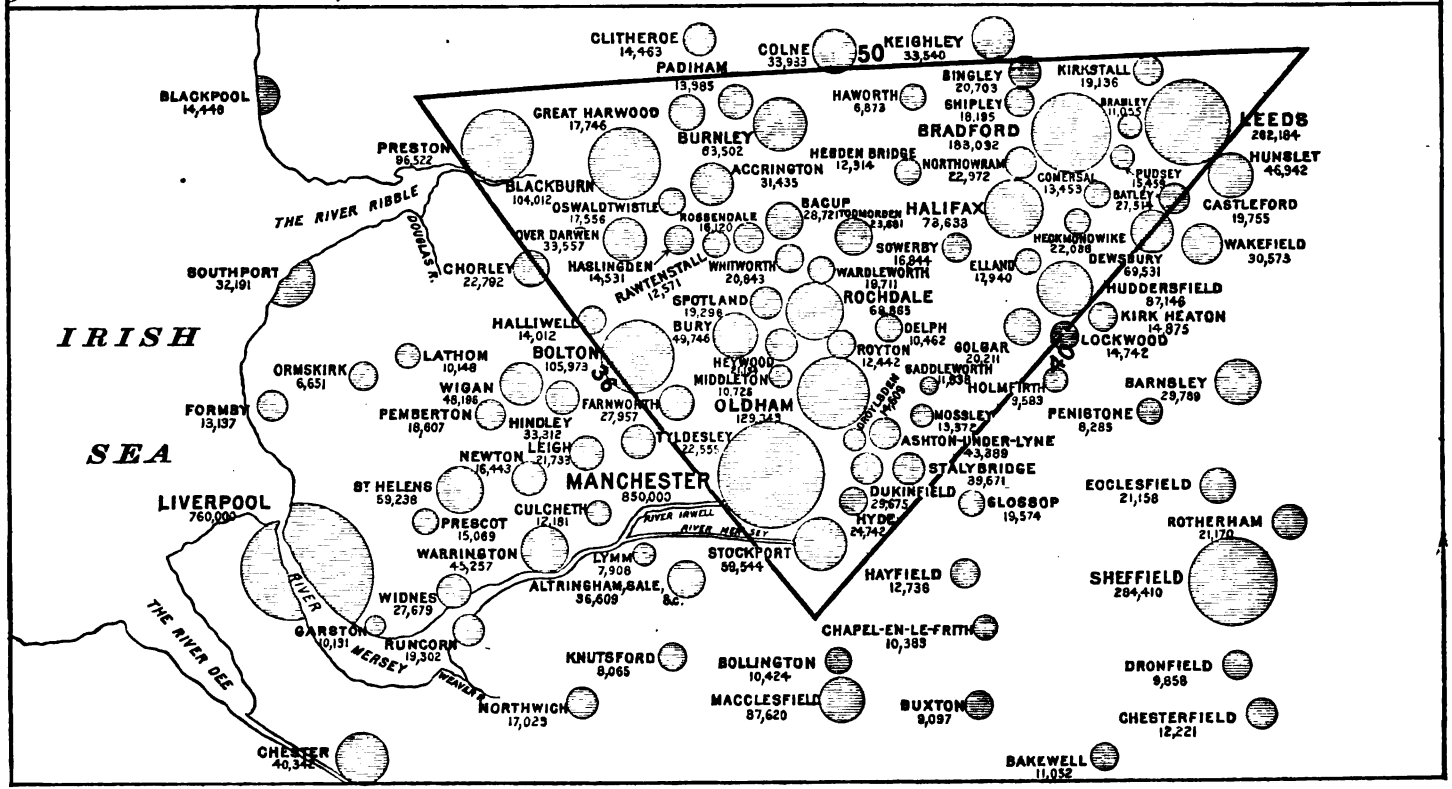
Again, taking another city, the neighboring port of Liverpool, whose greatness and just fame are so well known to Americans as to supply probably the very best standard by which to measure for them the real importance of Manchester, we find that within a radius of 12 miles from the Royal Exchange of Manchester there is a population of about 2,000,000, whereas a similar circle described about its neighbor would contain but about 1,000,000 people.

After the cotton-manufacturing trades, the great bulk of which are located in the Manchester district, come next in importance the mechanical industries of the district. The range and extent of these are unparalleled in the world, embracing the manufacture of locomotives, steam-boilers, and railway plant of every description; of textile machinery applicable to the cotton, woolen, silk, linen, and jute manufactures, and, in fact, of every variety of machinery.

The metropolitan character of Manchester is forcibly exemplified by its numerous exchanges and markets. In addition to the Stock, Corn, Provision, Coal, and Cotton-Waste Exchanges, the Royal Exchange has about 7,000 subscribers, which far exceeds the number of subscribers to any other exchange outside of London. An analysis of the list of subscribers to this exchange shows that more than 3,000 attend from places outside Manchester,

EXHIBIT No. 3.

ROUGH PLAN, SHOWING DISTRIBUTION OF POPULATION AROUND MANCHESTER.



in various parts of the United Kingdom, and coming from 177 different towns, Liverpool being represented by 267 subscribers. Then there is the Grocery Exchange (alluded to in my general report), with an average attendance every Tuesday of 2,000 of the representatives of the grocery-store keepers within an extensive radius; the Salford Cattle Market (also alluded to in the general report), the largest in the United Kingdom, with its extensive congeners; the Wholesale Carcass, Pig, Hide, and Skin Markets; the Smithfield Vegetable and Fruit Market, the largest of its kind in the United Kingdom; and the Wholesale Fish Market, only second to that of Billingsgate, in London.

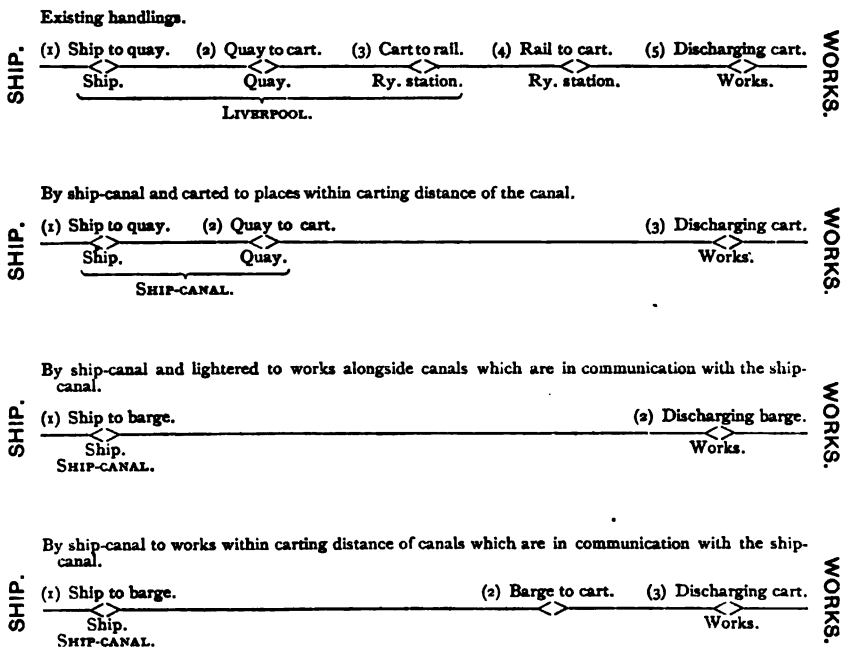
The output of coal within the ship-canal area is greater than the aggregate output of Northumberland, Durham, and South Wales.

The business of the Manchester post-office exceeds in magnitude that of any similar establishment in this country excepting the general post-office in London. In the city there are 5 branch post-offices and 77 receiving offices, besides the numerous pillar letter-boxes. The Manchester general post-office also has the administration of 102 post-offices in the surrounding towns.

The tramway system of Manchester and its suburbs extends over 130 miles of single line. The principal carriage company works 4,500 horses, and carries yearly, on an average, not less than 30,000,000 passengers.

[Exhibit No. 4.]

Diagram explaining the savings in the handling of traffic which will be effected by the Manchester Ship-Canal.



Although at present without direct access to the sea, Manchester is a customs port. It is ninth in the list of 135 ports in the amount of duties collected, and ranks immediately after the port of Hull and before Southampton, Plymouth, Dover, Sunderland, Grimsby, Cardiff, Swansea, Greenock, Dundee, Middlesborough, and other well-known ports.

And, finally, Manchester is the focus of a complete system of railways and canals, so that the changes which must follow from the constitution of a considerable shipping port in the center of a district possessing already such facilities of transportation and locomotion will be seen to be enormous, if we consider the saving in the cost of carriage and transhipment and in the handling charges upon the vast traffic already existing. — MANCHESTER, *June 1, 1888.*

E. J. HALE,
Consul.

ACCIDENT AND SICK INSURANCE OF AGRICULTURAL LABORERS IN SAXONY.

As a supplement to the report which I presented some time ago on the sick insurance law of Germany*, I beg now to offer the following sketch of the recent legislation in Saxony to extend the benefits of the law to laborers engaged in agriculture and forestry. These laborers, with some other classes of employés, were excluded from the compulsory operation of the imperial sick and accident insurance laws, but might be brought within its scope either by the local option of a community or by means of internal legislation on the part of any one of the states composing the Empire.

In Saxony, where about 300,000 persons are engaged in agriculture and forestry, small advantage has hitherto been taken of local option, owing apparently to the difficulty of distinguishing between the farm hands who are and those who are not liable to insurance. The Saxon Government has accordingly introduced a legislative scheme for the whole of Saxony, the chief provisions of which are as follows:

As regards sick insurance, the existing organization is so utilized that it is now compulsory on agricultural and forest laborers to belong either to an *orts kasse* or *betriebs kasse*, which represent the higher grade of insurance, or, where these do not exist, to the *gemeinde kasse*, which for a smaller contribution confers somewhat smaller, but still sufficient, benefits. Funds of lower grade, in which agricultural and forest laborers are enrolled, must either revise their statutes to the level required by the law for such laborers, or the latter must leave and enroll themselves in a fund of higher grade. Casual laborers are not liable to insurance unless the statutes of the local fund require it. The family of the employer may be enrolled in the *gemeinde kasse*. The employer himself can join only the *orts* or *betriebs kasse*, and that only when such cases are provided for in the statutes of the fund in question.

* Published in No. 81, July, 1887, pp. 29–36.

As regards accident insurance, the whole of Saxony has, for the purpose of insuring agricultural and forest laborers, been formed into a single *genossenschaft* or guild, with its seat and office in Dresden. Persons liable to accident insurance are first, all employés whose wages or salary does not exceed 2,000 marks ($476) per annum, and, secondly, the employer, his wife, and family. The former are assessed on their individual earnings, the latter on three-hundred fold average daily wages of the ordinary day laborer. By local statute compulsory insurance may also be extended to employés whose wages exceed 2,000 marks per annum. The local statutes may also settle the conditions on which persons not legally liable may effect insurance in the guild. For the first thirteen weeks after an accident the burden of insurance falls on the sick fund. At the end of that period, or earlier in case of death, the accident fund has to bear the compensation.

The executive functions of the guild are placed in the hands of a guild committee (*genossenschaftsvorstand*), who are assisted by confidential officers (*vertrauens maenner*), whose duty it is to supply the committee with information required from their localities. The annual accounts are to be audited and passed by the agricultural council for the Kingdom of Saxony. The law also contains a number of regulations for the conduct of the business of the guild which are only of local interest. It is, however, expressly enacted that no employer may contract himself out of his obligations under this act. Any such contracts with his servants or laborers are null and void.

With this act another important step has been taken toward the extension of the insurance acts to all classes of persons in the employment of others, and I may add, in conclusion, that the city council of Leipsic has also extended compulsory sick insurance to clerks and similar assistants in places of business within its district. —LEIPSIC, *June 14, 1888.*

SAMUEL ROLFE MILLAR.
Consul.

RUSSIAN KEROSENE IN CEYLON.

RUSSIAN OIL BECOMING MORE POPULAR LOCALLY.

At present the stores are filled with Russian oil (ex *Castle Eden*), which seems to be rapidly coming into favor. Up till quite recently almost the whole of the oil consumed in the island was American oil brought down in sailing vessels, but trial shipments of Batoum oil have been made in steamers, and the best results obtained. To begin with, the voyage by steamer from the Black Sea is necessarily very much shorter than that by sailing vessel from New York, the former occupying perhaps a month, the latter often as much as five months, and involving of necessity a very much larger percentage of leakage. Petroleum from New York by sailer seldom turned out less than 1½ per cent. leakage, whilst Russian shipments hitherto have averaged about ½ per cent., which makes a very considerable difference to importers. The Russian oil also seems to be of better quality than the American, and, although not packed quite so neatly, this defect will no doubt soon be remedied. The Batoum oil, too, is as clear and clean as the purest water, and is said to be a superior article. If that be so, our Yankee friends will have to pull themselves together, or be content to see their oil trade with the East—one of no inconsiderable magnitude—pass entirely from them. In 1887 119,140 packages of kerosene oil were imported into Colombo, equal to about 960,000 gallons, and the quantity increases every year, as the natives take more and more to the use of this oil for lighting purposes, instead of the vegetable oils in use. —TIMES OF CEYLON, *May 19, 1888.*

THE GOVERNMENT STOPS THE DISTRIBUTION—ALLEGED DANGEROUS NATURE OF THE OIL.

The *Castle Eden* arrived from Batoum with 70,000 cases of Russian kerosene oil on the 11th instant, consigned to Messrs. Volkart Brothers. This was the second shipment of petroleum landed since the new petroleum ordinance came into operation. A permit to land the oil was obtained from the Government as soon as the steamer arrived and the work commenced, about 5,000 cases being landed and stored in the Petroleum Storage Company's warehouse daily. The new ordinance provides that a Government officer shall go on board and obtain samples of all the petroleum on board and forthwith proceed to test it. In this particular instance this was not done, but about five days after the steamer's arrival Mr. Hallilley, the customs officer, proceeded to the store and drew samples. The importers had, however, previously to this supplied samples of the oil to Mr. C. E. H. Symons, who is possessed of the necessary apparatus for testing, and the result was most satisfactory, the flashing point being found to be so high as 80° and 80.5°. This appears to have satisfied Messrs. Volkart Brothers, and as a week elapsed after Mr. Hallilley drew samples and nothing was heard from the Government, it was naturally concluded that the oil had passed the test, as we believe all Russian oil has done in the East wherever imported. About a week after this Mr. Hallilley came to the store again and drew samples, but several days elapsed and again nothing transpired and the work of landing proceeded, and, finally, the *Castle Eden*, having discharged all her cargo, left the port. All this time delivery of numbers of cases of oil had taken place to various purchasers, and the store was being rapidly cleared of its contents, when on the 30th of last month—the day before yesterday—Messrs. Volkart Brothers received a letter from the colonial secretary informing them that the petroleum was found to be dangerous and giving them three days' time to adopt one of the three alternatives provided by section 12 of the ordinance, which are as follows:

(*a*) To rectify the petroleum.

(*b*) To apply for a license to import the petroleum as dangerous; or

(*c*) To re-export the petroleum.

The colonial secretary further intimated to Messrs. Volkart Brothers that a prosecution had been ordered against them for having distributed the petroleum. This is, of course, the only point on which the Government can catch Messrs. Volkart Brothers, as they were granted a permit to land and store the oil from the principal collector of customs. A summons will issue to-day, and Messrs. Volkart Brothers intend to plead guilty to having distributed the petroleum, and this will render them liable to imprisonment for one month or a fine of 500 rupees. But it is impossible to acquit the Government of grave blame in this matter. Why did they not cause tests to be made directly the ship arrived, and why did they wait until three-quarters of the cargo had been landed and distributed to their knowledge before making a test? The *Castle Eden* arrived on the 11th of last month, and the Government only acquainted Messrs. Volkart Brothers with the result of their test on the 30th, nineteen days afterwards, and then give the importers three days to do three things, each of which is admitted an act of physical impossibility. There is no apparatus in Ceylon for rectifying petroleum; to apply for a license to possess dangerous petroleum means that the whole of it—140,000 tins—will have to be bottled and labeled and might as well be destroyed, for it will be of no use, and to tell them to export the petroleum when the ship is gone is of course absurd, seeing there is no means of shipment, and if there were no one would take it. Messrs. Volkart Brothers, therefore, told this plainly to the Government, and furthermore challenged the correctness of the test submitted by Dr. Attygalle, and said the oil was tested before shipment, and that the shippers guarantee the flashing point not to be below 76° F. Further, they stated that they have had tests applied here by competent persons which turned out satisfactorily, and begged the Government to direct the oil to be re-tested by some other officer. Finally, they gave notice that they hold the Government responsible for all losses and damages arising from detention and through wrongful classification of the oil.

This, of course, has stopped the delivery of oil from the store, but meanwhile, at the importers' instance, Messrs. Symons and Cochran are taking careful samples drawn from the whole consignment, and will submit half to immediate test and forward the other half by steamer to the Government tester in Bombay. Any petroleum having a flashing point below 76° F. is ranked as dangerous petroleum. The result obtained by Dr. Attygalle, whose second essay in this work it is, was that the flashing point of the oil in 14 samples varied from 73.6° to 75.3°. The Government is, it is said, desirous of making an example of Messrs. Volkart Brothers in this matter, but their new-born zeal in this direction is in strange contrast to the apathy which has allowed thousands of cases of oil, in contravention of the ordinance, to be stored in boutiques in the pettah and elsewhere. Further, it is rather hard on Messrs. Volkart Brothers, who have more than any other firm endeavored to comply with the requirements of the ordinance by building stores after the model and instructions laid down by the Government.

By waiting a fortnight before making the tests required by law the Government behaved most unjustly, even supposing their test is correct, which, in the face of Mr. Symons' test, we doubt. In Bombay the custom is as follows:

"On a ship's arrival a general manifest is entered. Then a few cases are landed by the preventive officer and delivered to the Government analyst, who grants the certificate the following day. Meantime discharging goes on into boats until the permit and certificate of test is granted."

This information has just been obtained by wire from Bombay by Messrs. Volkart Brothers, and shows how much more business-like is the action of the Government in Bombay. As regards the accuracy of the tests of Dr. Attygalle, it will be a serious matter for the Government if it turns out after all that they are inaccurate, and the claims of the importers, Messrs. Volkart Brothers, against them will be very heavy indeed. The Government is quite right to protect the public and enforce the ordinance, but such laxity as they have displayed in this matter is culpable.—TIMES OF CEYLON, *June 1, 1888.*

MESSRS. VOLKART BROTHERS BEFORE THE POLICE COURT OF COLOMBO.

In our last night's issue we had an article regarding the kerosene oil imported by Messrs. Volkart Brothers and the action of the Government on its alleged dangerous nature. Those proceedings have been followed up by the institution of a case in the police court of Colombo this day, when Mr. P. Daendliker, the representative of the firm of Messrs. Volkart Brothers, and Silva, the storekeeper, were charged by Mr. H. C. P. Bell, deputy collector of customs, with transporting kerosene oil before it was tested by the officer appointed by the Government for the purpose. Acting Solicitor-General C. P. Layard and Crown Counsel Fisher appeared for the prosecution, and Messrs. F. C. Loos and R. E. Perera, proctors, for the defense. The accused pleaded guilty to the charge. Mr. Layard stated that, as Mr. Daendliker undertook not to transport the oil again until the required test was made and the certificate given, the Crown will be satisfied with a nominal punishment. Mr. Loos submitted that the offense was committed entirely under a misapprehension, and that the oil was imported for other parties, who were allowed to remove it.

The court reserved judgment till Monday next.—TIMES OF CEYLON, *June 2, 1888.*

KEROSENE OIL.

With the prevalent activity displayed in the import of kerosene oil, the fear is also not unreasonably felt whether the speculation would not be carried to the extent of creating a reaction in favor of our "old love," cocoanut oil? Many persons who have for years used kerosene, and who have always been most grandiloquent in its praise, are amongst the foremost at present to decry against the kerosene now largely in use. I suspect it is the Russian oil. Give a dog a bad name and hang it, they say. Is it so with Russian oil? It is said to be watery, smoky, and liable to crack chimneys. Perhaps all this may not be true, but there can be no doubt that persons who condemn it have no interest in the kerosene trade.—CEYLON OBSERVER, *May 30, 1888.*

TOBACCO CULTURE IN BELGIUM.

The culture of tobacco is of importance only in the provinces of Flanders and Hainault, though it is somewhat practiced in Brabant and Namur. The statistics of production are:

Year.	Area planted.	Production.	Number of plants declared.	Avereage product per hectare.
	Hectares.	*Kilograms.*		*Kilograms.*
1846	666	1,206,583	.....	1,810
1866	1,694	3,157,631	.....	1,864
1880	1,577	3,022,906	.....	1,917
1881	2,572	5,678,976	96,707,208	2,208
1882	2,428	4,533,076	90,321,600	1,867
1883	2,344	4,192,792	81,852,800	1,793
1884	1,700	3,165,000	61,584,865	1,862
1885	2,017	4,452,502	73,036,027	2,206
1886	2,070	.....	74,951,637	.....

In 1879 an excise was imposed, proportioned to the area planted, while heavy duties were laid on imported tobacco. The production rapidly increased. In 1883 the system of taxation was changed, and a duty of 3 centimes collected on every plant, the import duties being again increased. Production at once decreased, and the tax proved so heavy that, at the request of the planters, the Government made another change in 1883, the excise being reduced one-half. This has been followed by an increase in the area planted.

TONNAGE DUES IN PORTUGAL.

As referred to in Mr. Lewis' No. 124, the tonnage dues of this Kingdom have been materially modified by a law passed by the Côrtes and approved by the King on the 23d of June, 1888, the same to be enforced from the date of promulgation thereof.

The effect of this law is to increase the tonnage dues in all Portuguese ports, except in the port of Funchal, Madeira, in favor of which there are certain exemptions. This increase in the case of steamers amounts to 65 per cent. on certain classes and to 160 per cent. on others. This arises from the adoption of the Moorsom system of measurement. On the other hand, the same system applied to sailing vessels reduces the dues in all cases from 110 to 45 reis a ton. In all cases, other port charges, such as anchorage, pilotage, sanitary dues, etc., remain fixed as heretofore.

I inclose a copy of the law, with translation thereof.—LISBON, *June 28, 1888.*

J. B. WILBOR,
Vice and Deputy Consul-General.

[Translation.]

Dom Luiz, by the grace of God, King of Portugal and of the Algarves, etc. We make it known to all our subjects that the general Côrtes decreed and we will the following law:

ARTICLE 1. Tonnage and anchorage dues, as applicable to national and foreign vessels in the ports of the continent of the Kingdom and adjacent islands of Azores and Madeira, shall be hereafter regulated and collected according to the following provisions:

First. National or foreign sailing or steam vessels employed on the high seas, or long voyages, will be subject, when leaving national ports, to the payment of *45 reis per ton.*

Except: (*a*) National or foreign steamers belonging to lines which perform regular service and are subsidized as mail boats, whether they commence their voyages in the ports of Portugal or touch there at least once a month, shall pay 20 reis per ton if they gratuitously take in and out the mails, and 25 reis if that transportation be not gratuitous.

(*b*) Steamers not employed in the subsidized service of the post-office, although they may transport mails gratuitously, when they come for cargo or passengers, or even to disembark passengers or part of the cargo, will pay 30 reis per cubic meter.

(*c*) Vessels coming in or going out without any commercial operation, or those included in any other cases of exemption maintained in Article 2 of this law, shall not pay any tonnage duty. But, in these cases, when vessels remain in port beyond the time or beyond the conditions indicated by the regulations, the Government can claim anchorage duty not superior to the minimum fixed by this law, which shall be fixed by the same regulations.

(*d*) Vessels leaving the Douro shall pay double the duties established by the present law, half of it being exclusively applicable to the improvements of the bar, in substitution for the actual special tax levied by the decree of February 15, 1790.

Second. The admeasurement of vessels in tons shall be calculated, for the intents and purposes of this law, at the rate of 2.83 cubic meters per stowage ton. The total number of cubic meters is to be divided by that figure, as arrived at by Moorsom's process, and the quotient will show the number of tons liable to the respective tax.

When there are no papers on board, or when these do not contain the necessary indications in the respective regulations, the capacity of the vessels in cubic meters shall be determined by the Moorsom process of measurement of loaded vessels, or rule second of the Moorsom system.

Third. Vessels shall be free of any tonnage duty in the port of Funchal for five years, counting from the promulgation of the present law, except in face of contracts, or those of companies subsidized by the state.

ART. 2. Remains in force what is required in Articles 3, 4, 5, 6, 7, 8, 9, and 10 of the law of December 27, 1870, and what is prescribed in Nos. 1 and 10 of Article 151, and in Articles 152, 153, 154, 156 and its paragraph, all of the law of June 4, 1886; all contrary legislation being revoked, including decree of February 15, 1790, No. 9 of Article 115 of the decree of June 4, 1886, and No. 8, Article 93, of the law of July 29, 1886.

We, therefore, order all authorities to whom belong the knowledge and execution of said law that they fulfill and keep it, and make it be fulfilled and kept in its entirety.

AGRICULTURE IN NORTH CHINA.

Agriculture among the Chinese was the invention, according to their own statements, of the Emperor Shen Neng, who, succeeding Fuh-hi, the first Emperor of China, ascended the throne 2,737 years B. C. It was he who "first fashioned timber into plows and taught the people the art of husbandry." He also discovered the medicinal virtues of plants and instituted the custom of holding periodical markets for the barter of commodities.

The Chinese, from that legendary time to the present, have always been an agricultural people, and their Emperors, without regard to race, whether native, Mongol, or Manchee, have encouraged this habit, doubtless seeing in it the greatest safeguard of the throne. The present dynasty has continued all the ceremonies instituted in ancient times tending to ennoble the occupation of the farmer. Even now the Emperor makes his annual visit, at

the vernal equinox, to the Temple of Agriculture and, after plowing with his own hands a few furrows, offers sacrifices at the four altars of the gods of heaven, the gods of earth, the planet Jupiter, and the Emperor Shen Neng. Notwithstanding the great antiquity of this art among them, and the great respect in which it is held, the Chinese have failed to make any great progress in it. Their system of cultivation is very careful and marked by attention to details, but shows ignorance of the principles of rotation of crops, adaptation of soils to particular grains, and an extremely primitive knowledge of agricultural implements. Their fields are treated like immense gardens. They are subjected to the most constant and watchful care, both at time of planting and during the growth of the grain. When ripe, the crop is gathered by hand with the utmost completeness; not a straw or leaf, scarcely even a root, being allowed to remain.

In threshing grain the Chinese spread it out on a smooth clay floor in the open air, there being such a threshing floor adjoining every farm-house, and either by threshing with flails or by rolling a stone roller, drawn by a donkey, over it detach the grain. The chaff is removed by tossing the grain into the air in a slight breeze, the kernels of grain falling straight to the ground, the chaff and dust being blown aside.

The two most characteristic features of Chinese agriculture are the use of manure and the systems of irrigation. Manure is gathered from all conceivable sources. In the cities the night-soil deposited on the sides of streets and alleys is gathered by men and boys in buckets and mixed with clay, dried in the sun, and sold to farmers. On country roads boys, and often girls and women, are seen at places where large numbers of pack-horses, camels, and mules pass, gathering into baskets the material which is afterwards, with such beneficial effects, spread upon their fields. Earth from the canals, rivers, and city streets is also carted away for the same purpose. "Other substances are diligently collected," says Williams, "as hair from barber shops, exploded fire-crackers, and sweepings from the streets, lime and plaster from kitchens and old buildings, soot, bones, fish, and animal remains." The quantity of these fertilizers used and the importance the Chinese attach to them are proved by the number of people whose livelihood is gained in their collection.

In irrigating his land the farmer uses many devices. Where running water is at hand he turns it to advantage by directing it over his fields in large channels, banked in with clay, and subdivided into smaller and smaller streamlets, until every part of the ground has been reached. If no running water is found, wells are dug and water drawn up by hand and poured into the main ditches, which are subdivided into numerous smaller ones. Holes are dug in which rain water accumulates, which is baled out when needed. The raising of this water is in most cases, especially in the vicinity of Peking, done very laboriously by hand. Windmills, of which there is not one around Peking (if anywhere in China), might be used for this purpose with great increase of efficiency and saving of human labor.

Chinese agricultural implements are of the rudest character. They are, chiefly, the plow, the hoe, the harrow, the rake, and the stone roller. The plow is simply a broad blade fastened to a rough handle, guided by a man and drawn by teams of the most miscellaneous description; it cuts a furrow never more than 6 inches deep, and frequently only 2 or 3. The teams are made up of horses, donkeys, mules, bullocks, and human beings, it being not unusual to see a man or boy and any one or more of the animals above named drawing the same plow. Chinese farmers measure the depth of the furrows by the fingers, and frequently speak of plowing only 2 or 3 fingers deep. The reason of this seems to lie in the difficulty of making a deeper furrow with their plows, and not because they are unaware of the advantage of it. The hoe is a much more effective tool, and it is with this that they work between the furrows of grain after it has sprouted.

Foreign agricultural implements, especially plows, might be introduced with good effect among the Chinese, except that the price would deter all but very few from buying them. A Chinese plow can be bought for the equivalent of two or three Mexican dollars, and smaller tools in proportion. There are no great stores devoted to the sale of agricultural implements as with us, they being made by hand, either by a neighboring blacksmith or by the farmer himself, as occasion demands.

The unit of land measure in China is the mou, commonly translated acre, but of which 6.61 constitute 1 English acre. The table of land measure runs as follows: 100 square inches = 1 square foot (1 Chinese foot = 14.1 English inches); 25 square feet = 1 pace (or yard); 4 square yards = 1 chang (rod or pole); 6 chang = 1 fen (or rood); 10 fen = 1 mou (or acre); 100 mou = 1 ching. The mou, however, varies in other provinces.

In measuring grain the tables used are somewhat similar to our own, the unit being the sheng, which contains nearly an English quart. The Chinese grain measure runs as follows: 3 cups = 1 sheng (or quart); 10 sheng = 1 tou (or peck)*; 10 tou = 1 tan (or picul). The number of tou in a tan varies, however, with various systems of measures in different localities and in the same locality. By the "Tien-Tsin measure," as it is called in Peking, and which is the standard, 10 tou = 1 tan. It is common, however, at the markets to sell by a measure called "the nine-six," because it contains only 9 tou 6 sheng to a tan, or is 4 sheng short of proper weight. The various gates of Peking also have standards differing from one another, and in retailing it is common for dealers to sell by what is called the "door measure" (mên tou), containing only eight or nine tenths of the full amount. The price of grain varies, of course, with the measure used.

The principal crops in the vicinity of Peking, besides the fruits and vegetables, of which there are almost all that are found in western countries, are wheat, barley, buckwheat, numerous varieties of millet, beans, Indian corn, sesamum, hemp, rice, cotton, and some tobacco.

* The "market" tou is equal to about 10½ liters, or 2¾ gallons.

Wheat in North China is planted in two crops, known as autumn and spring wheat, of which the autumn wheat, in both quantity and quality, is superior. This is planted at about the autumnal equinox, or, at the latest, not after the semi-monthly period known in the Chinese calendar as the "cold dew" (about October 8). It is harvested at about the summer solstice. The yield per Chinese mou is estimated in a good year at 1 tan, or about 240 pounds, or nearly 1,700 pounds per English acre. Wheat is not, however, sown broadcast. It is carefully sown in furrows about 18 inches apart, leaving room between furrows for hoeing, in which, when the wheat is partly grown, some vegetable crop is planted. The seed required to sow a mou of land is about 17 to 20 pounds, or nearly 130 pounds to the English acre. The seed, say the Chinese farmers, should be sown in damp ground.

The price of wheat in Peking varies every day, just as in other centers, according to supply and demand. It is fixed by brokers at the markets, who are under official supervision, and who arrange sales and measure out the grain, receiving a small commission. A Chinese tan (about 240 pounds) was quoted in Peking a few days ago at 2.6 taels*, or $2.85 in United States currency.

Spring-wheat is only sown when, by reason of excessive rains or other unfavorable causes, the ground is not ready for the autumn crop. It is then sown at about the spring equinox, or not later than the period known as the "pure brightness" (about April 5). It ripens at the same time as autumn wheat, but produces some 20 to 40 pounds less grain per mou, and is of inferior quality.

Both spring and autumn wheat are used exclusively for the manufacture of flour, being ground by mills worked by hand, horse, or donkey power, or, rarely, by water-power.

Barley is planted by the Chinese at about the spring equinox, and harvested at the summer solstice. It is planted in the same manner as wheat, producing a few pounds more per mou and requiring about half as much seed. This grain, when husked, is used as a substitute for rice; also mixed with a kind of pea, grown in this vicinity (the wan-tou, resembling the marrow-fat pea), it makes a ferment for wine.

Barley is worth about 2.7 taels per tan when husked, and about half this sum otherwise.

Buckwheat, called by the Chinese "triangular rice," is sown during the thirty days following the summer solstice and harvested in early October. It produces about 1½ tan per mou. It is used solely for the manufacture of flour and is worth about 1.5 taels per tan.

There are several varieties of millet grown in North China. They are all planted in early April and gathered in early September. Among them are the tall millet, producing a red grain, and one exactly similar, except that the grain is white. The red is used as food for horses and to manufacture wine; the white, which is of a superior quality, is made into flour for human

*The Peking tael is equal to about $1.10 United States currency.

consumption, and costs slightly more. The tall, slender stalks of this grain are used for making thatched roofs, instead of lathing for ceilings, and for a number of similar purposes. The grain is worth from 1.6 to 2 taels per tan.

The variety of millet known as "Italian millet" is grown in immense quantities in various parts of China. It is an exceedingly productive grain, 7 or 8 pounds of seed to the mou producing over a tan of grain. It is eaten boiled when unground, and is also ground into a fine yellow flour. A tan costs about 1.6 taels, twice that sum when husked. Two varieties of the panicled millet are found near Peking, resembling one another, except that one, called by the Chinese "shutzu," is exceedingly glutinous, while the other is not. In time of sowing, quantity harvested, etc., it resembles the millet last mentioned.

Indian corn is planted in early April, or never later than the last of May. The grain is ready for harvest by the middle of September. A mou of land takes about 12 pounds of seed, and produces about 1 tan (6 or 7 tou) of grain. Corn is sown by the Chinese in furrows, about as in America. The grain is made into meal for human consumption. It costs, shelled, 1.6 taels per tan.

Beans of many varieties are grown in immense quantities in North China. They are distinguished by the Chinese as yellow, white, green, black, etc. They are used for a variety of purposes, such as the extraction of oil, manufacture of vermicelli, the manufacture of soy (a kind of pickle), flour for a stuffing for cakes, ferment for wine, and as food (chiefly the black beans) for horses and camels. These beans are generally planted at about the summer solstice (though sometimes in early April), and ripen at the autumnal equinox. The price of a tan varies from 2.1 to 2.8 taels, according to the use to which they are put, the costliest being the variety used in the manufacture of vermicelli.

Sesamum is grown solely for the oil extracted from it. This oil, called "fragrant oil," is used extensively by the Chinese in cooking, and sometimes for illuminating purposes.

Hemp is grown for the manufacture of rope, the variety found in North China being the abutilon hemp. It is sown in furrows, very wide apart, and produces about 1 tan to the mou.

Both upland and wet rice are grown in the vicinity of Peking, the former producing an inferior grain. The subject of rice culture has always ranked with the manufacture of silk and the growth of tea as the three most characteristic pursuits of the population of China. They have been the themes of many books and treatises by both foreigners and natives. Chinese Emperors and Empresses have often interested themselves in these pursuits, and have done all that they could to assist and encourage the people in following them. During the Yāan or Mongol dynasty, in 1210, an illustrated work on rice planting and silk growth and manufacture was printed by order of the Government, which remains to this day among the best executed works ever pub-

lished in China. These branches of agriculture have been too exhaustively treated to render it desirable to more than mention them here.

A comparison of the yield of the fields of China with that of American farms would be interesting if it could be accurately made. The difference between the styles of planting makes this difficult, if not impossible, the grain in America being sown broadcast, or drilled, while in China all cereals are carefully planted in furrows, wide distances apart. The absence of any statistics as to the average product per acre, such as are found in the United States, makes this comparison much more difficult, the products, as given above, being the yield of good land for a good year. It is probable, however, that, in proportion to the quantity of seed sown, the farmer of North China gets a larger return than the average return in America. This would be the natural result of his careful system of planting, harvesting, and threshing, involving no loss whatever. The saving in America effected by using drills instead of sowing broadcast is an index of the probably greater gain of the Chinese method. This is not to say, however, that the gain is sufficient to compensate for the great extra labor.

The Chinese system of growing two crops on the same ground at the same time, while advantageous in some respects, can not be regarded with approval. It is probable that a deterioration results in the quality of both, if not in the quantity of the yield.

China is essentially a treeless country. Importations of wood come chiefly from the United States, the Spanish Islands, Hainan, and Formosa. Were it not for the countless cemeteries in China trees would be rarely seen. These cemeteries are planted with pines and cedars, and dot the landscape with agreeable effect.

Owing to the vast spaces occupied by the grounds of princes and mandarins, trees are numerous in the cities. Peking, from the city wall, presents in the spring and summer the appearance of a great grove. The houses are largely hidden from view by the foliage.

The overflow of the Yellow River has turned the attention of the Chinese to arboriculture. I inclose herewith an interesting proclamation by the viceroy Li on the subject. The "eight directions" and the "ten benefits" are worthy of perusal by our own people.

The peepul puti (*fiscus religiosa*) at the south and the sophora at the north and other aged trees are worshipped for long life (Williams, Vol. 1, p. 259).

There is an example of this worship just outside of the city walls of Peking. A huge trunk of a tree said to be seven hundred years old is inclosed in a building. A priest is in charge of it, and worship is had there at stated periods.

In a crowded country like China, where population crowds, in spite of the utmost frugality and diligence, close upon the means of subsistence, any improvement in agricultural methods, increase in the production of old crops, or introduction of new ones from abroad are matters of great importance.

In this last respect the debt of the people of China to Western countries, though unknown and unadmitted by them, is beyond calculation. It would be interesting to know just what grains, etc., were indigenous to this soil or were brought by the earliest comers; but this, of course, is impossible. Wheat, at one time believed to have come from Asia, is now known to be indigenous to certain districts on the Mediterranean. Indian corn is probably a comparatively recent importation, and tobacco is proved by its Chinese name to be of foreign origin. Irish potatoes are of so recent advent that their use is not yet common among the people. Many other vegetables and fruits are just beginning to obtain a foothold here. —PEKING, *April 23, 1888.*

CHARLES DENBY.

VICEROY LI'S PROCLAMATION ON TREE CULTIVATION.

A proclamation from Li, Viceroy of Chihli, etc., to exhort the people of his province to cultivate trees after approved methods, with the view of securing benefits to the people and the country.

One of the first principles of governing a state is to look into the nature and uses of its land, to ascertain how it may best surbserve the benefit of individuals and the purposes of the state. In the province of Chihli the soil of her alluvial plains is soft and fertile, and this fertility extends to a great depth. Arboriculture is, therefore, rendered so much the more easy and advantageous. But at present in the various prefectures of Chihli, aside from the several species of fruit trees, such as the chestnut, pear, peach, apple, and apricot, other kinds of trees are rarely seen, as the mulberry and the ching tree (a thorny bush) of Yung-p'ing-fu, which is used for making a species of paper, and for medicinal purposes. In consequence of this general lack of tree culture, vast tracks of fertile plains are left barren, presenting a most monotonous and uninviting appearance. In looking for the cause of this treeless barrenness, it is to be found in the high winds which prevail over these northern parts. When trees are newly planted their roots are easily shaken and disturbed, and unless planted to a great depth they can not withstand the wind. Many of the peasants do not understand the loose nature of the surface soil, and, consequently, by not planting their trees to a sufficient depth, or selecting moist solid ground for planting, they lose their trees, and their labor becomes fruitless. Few of them ever study the principles of arboriculture, and, as a result, they become discouraged by their non-success, and, giving up the industry altogether, they allow the rich alluvial lands to lie unutilized. The viceroy has in recent years given orders for the planting of willow trees along the banks of the various rivers and streams in Chihli, as a prudential measure for strengthening and protecting the embankments.

If successful methods of tree cultivation in salt lands have been found, how much more easy will it be to carry on arboriculture on rich level plains? Therefore, the authorities of various prefectures, sub-prefectures, and districts of Chihli are hereby instructed that they must procure the necessary seed trees, and inform the people of their respective jurisdictions of the "eight directions of tree plantation" and the "ten benefits to be derived from same," which accompany this proclamation. Having these directions given them, the people may proceed with tree plantation, at first experimentally. Measures should be adopted to encourage the people in this industry, and no official agents should be sent who, on the pretext of inspecting and reporting the progress of tree cultivation, really disturb and oppress the people. But at the end of every year the people should be required to submit a statement giving the number and kind of trees planted, how many survived, what their present condition is, etc., so that the authorities may award those who evince the greatest diligence in carrying out the Government's instructions. And should any be guilty of stealing or cutting down other people's trees, such should be summarily apprehended and severely dealt with by the local authorities. The

people should all know that the earnest desire of the viceroy in ordering this system of tree cultivation is that another source of obtaining a livelihood may be afforded the peasants; that droughts may be prevented; that river embankments may be strengthened; that the rain-fall may be regulated; that the country may be beautified, etc. The "eight directions" and "ten benefits" are appended below.

THE EIGHT DIRECTIONS.

1. On account of the loose nature of the soil near the surface the cold penetrates to a considerable depth and very easily injures the roots. To fortify the roots against injury from cold and other causes a fertilizer should be used when planting trees, this fertilizer to be prepared by burning a mixture of dung with grass and then adding to it a proportionate quantity of earth. After putting in the fertilizer the roots should be carefully and sufficiently covered.

2. After a tree has been securely planted a small cumulus of earth should be placed around it, 6 or 7 inches high, and this cumulus should be renewed at the approach of every winter until the end of the third year after planting. In this manner the tree will be unaffected by the wind or cold and can not possibly fail to grow. If this is not done the vitalizing moisture in the earth will escape, and the roots will lack their natural necessary nourishment.

3. In places which are exposed to the high winds trees should be planted at least 3½ feet deep. Without this depth the rich part of the soil will not be reached, and tree planting can not be successful. In the case of the willow and trees of that kind, their outspreading and dependent branches should be carefully pruned, in order to preserve the nourishment for the trunk and main branches.

4. Where the soil is poor and sterile it should be improved by the introduction of some rich earth, and adding to it some suitable fertilizer.

5. In the case of the oak, elm, willow, mulberry, poplar, cypress, etc., they shed their seeds every year, which, falling into proper ground, will take root and grow into young trees. To prepare the earth for the growth of the seeds, a trough should be dug around each tree and filled with water in order to keep the soil moist.

6. With willow and mulberry trees planting should take place in the spring, when there is rain. In one year's time the cuttings will have taken root. But before planting the young shoots the soil should be well loosened and fertilized, and grafting should take place after the rain. After planting, the graft trees should be well watered every other day.

7. In transplanting trees strict care should be exercised. Every tree has three vertically-projecting roots which will dry up if exposed to the wind or sun. Wait till there is rain, and then, having dug a small hole by the side of the tree, carefully cut away one of these straight roots. This process should be repeated after half a month should there be rain; if not, a month must elapse before the second operation. This is to be repeated until the three roots have been cut away. While these roots are being cut innumerable new rootlets will be thrown out, and these, as soon as the tree is transferred, will quickly take to the earth. In case of there being no rain, however, they should be well watered.

8. In trying to raise trees from the seeds of the mulberry, oak, etc., some fertile spot should be chosen and prepared, and then plant the seeds in the same manner as one plants seed of grain. The spring is the best time, and when there is rain. In one year's time young trees, 1 or 2 feet high, will spring up, and these can be easily transplanted.

THE TEN BENEFITS.

1. By planting trees along river banks, where the soil is loose and sandy, the banks will increase in height, and the roots, by their numerous ramifications, will bind and strengthen the soil against the pressure of currents and floods.

2. By covering the mountains on the borders with the pine, elm, willow, etc., a large industry in timber will spring up, which will afford abundant material for house building and other purposes.

3. By planting trees about the fields and farms, they will serve to absorb the superfluous moisture and preserve a just equilibrium of "wind and fluid influences."

4. Where there is an abundance of trees rain will be plentiful, and no droughts will occur in spring or summer.

5. An abundance of trees can also ward off epidemics, and where the people dwell closely together more trees ought to be planted, because they will absorb the carbonic acid and other noxious gases.

6. By having an abundance of groves and trees, travelers and families can find rest and shelter in summer under their shade.

7. Trees and forests being plentiful, they will obstruct the free operation of highwaymen and banditti.

8. Extensive forests of trees on the mountains of the remote borders will serve to absorb a great part of the snow when it melts in the spring.

9. The wretchedly poor peasants, by having a number of trees of their own, will derive sufficient fuel for their needs out of the branches, which they can prune away every year with benefit to the trees.

10. The [*] tree and the [*] trees are of two species, the large leafed and the small leafed; and the [*] (quercus Mongolica) is also of two species, the red bark and the white bark. These and the oak can afford food to the silk-worm, and in cold mountainous regions, where the silk-worm subsists merely on the leaves of these trees, they weave a cocoon which, when made into silk, is much cheaper and more durable than that made from the cocoon of the mulberry silk-worm.

RUSSIAN KEROSENE IN AFRICA AND SPAIN.

[From an article on Russian kerosene trade with Tunis and Spain in the Moscow Gazette, June $\frac{7}{19}$, 1888.]

Until the year 1885 Russian kerosene was quite unknown in Tunis. In the interior only vegetable oils were used for lighting purposes, and in towns near the sea-border and sea-ports of Tunis only American kerosene was obtainable, it being supplied either direct from the United States or through commission houses in Malta and Italy.

In 1885 the Genoese merchants first began to supply Tunis with Russian kerosene, and it immediately gained the day and drove the American oil almost completely out of the market.

The following figures taken from a statistical report published by the Tunis Government shows the value of the kerosene imported in 1886 and 1887:

	1886.	1887.
Russian kerosene	$40,230	$39,415
American kerosene	15,475	580

In 1888 the demand for Russian kerosene increased considerably, owing to the orders that came from the interior, where it has begun to supplant vegetable oils.

The trade in Russian kerosene at Tunis is still in its infancy. It has but just commenced, and the oil is only supplied in soldered tins of about 3½ gallons each.

There can be no doubt that in future the importation of our kerosene will far exceed the figures above quoted, and if any of the Russian compa-

*The Chinese characters are omitted.

nies were to establish a central depot at Tunis a large and profitable trade would no doubt result. The whole of the northern coast of Africa, including Algeria and Tripoli, could eventually be supplied with Russian kerosene. But should such a depot be established it would certainly be much more advantageous to supply the kerosene in casks or in bulk, as the tins add considerably to the cost of the oil.

Such a change would also be of great benefit to the Russian merchant fleet. The Italian steamers, which at present monopolize the carrying of our kerosene in tins, are not allowed to carry inflammable oils, unless hermetically sealed; the transport in casks or in bulk would therefore pass over, without competition, to the Russian merchant ships, and would be carried from one of our Black Sea ports direct to the central depot in Tunis.

A still more important market for Russian kerosene is Spain. According to existing statistics the consumption of it amounts to about 44,000 tons. The duty on kerosene imported into Spain is the same wherever it be imported from, no difference being made; as, for instance, in the case of spirits, where we are at a great disadvantage, as compared with Germany, the latter, as a more favored nation, paying but $4.08, whereas Russian spirits pay $4.58.

With kerosene this is not the case. We are placed on an equal footing with America, and we should lose no time in securing the Spanish market; if not in its entirety, at all events a fair share of it. I will now endeavor to show what conditions we have to meet in order to successfully compete for this trade.

The Spanish Government in its desire to protect the trade in vegetable oils of native production levies a heavy duty upon mineral oil in its crude or unrefined state, and a much heavier duty on refined kerosene, in order to encourage the refining of it in Spain. The duty was at one time $5.07 per hectoliter (about 22 gallons) of refined kerosene, and $2.32 for unrefined, and the results were that in 1886 only 580 tons of refined kerosene and 45,000 tons of crude or unrefined kerosene was imported, and several refineries were erected, giving a very handsome profit to their owners. With a view to still further protecting the vegetable oils of native production, the duty on refined kerosene was again raised to $6.18, and for refined to $4.05.

Under those conditions the importation of refined kerosene has become extremely difficult, but to import refined Russian oil is quite impossible, because the American gives much less residue; the consequence being that more refined kerosene is obtained from it than the Russian. Russian naphtha gives as much as 35 per cent. residue.

In order to compete successfully with America it is necessary to refine our naphtha at home, in Russia, to such an extent as to leave no more than 21 or 22 per cent. of residue in it—it then pays the duty of unrefined kerosene, because all kerosene imported into Spain containing more than 20 per cent. of residue is classed unrefined.—Moscow, *June 1–13, 1888.*

N. W. HORNSTEDT,
Acting Consul.

COMMERCE OF GIBRALTAR.

The intention on the part of the British Government to establish some sort of a custom-house at Gibraltar, with the sole object of suppressing the smuggling of tobacco into Spain from this fortress, although considered to be as yet an open question, seems to be at this moment in a state of temporary abeyance, no doubt the consequence of the continued perseverance and earnest remonstrances on the part of the commercial community of Gibraltar against the carrying out of any such projected measure, which it is generally accorded would be an act of open hostility towards the common interests of its inhabitants, who certainly are not responsible for the carrying on of this smuggling trade by the neighboring Spanish people, since the trade in tobacco is carried on in this market in as legitimate a manner as in any other tobacco market in the world.

It would seem that the different chambers of commerce in Great Britain uphold the remonstrances of the Gibraltar commercial community most strenuously, as it must be quite manifest to the Spanish Government that the actual stringent restrictions which are vigorously exercised by the local authorities of this fortress to prevent tobacco from being introduced into Spain by the land communication, added to the very strict port regulations adopted towards the clearance of Spanish lateen crafts departing daily from this port, offer a clear proof of the unquestionable and sincere desire of the British Government to assist Spain against any infringement upon her revenues from this quarter. In fact, the British Government has recently gone so far as to increase the civil police force outside the gates of this fortress, close to what used to be called the "neutral ground," where the Spanish officials now stand guard for the special purpose of preventing stragglers from the Spanish lines from loitering around the British outposts.

Such proceedings between two foreign powers may be justly regarded as quite a special act of comity on the part of Great Britain towards Spain, which I may add entails upon the Gibraltar colonial fund an extra expense of several thousands of pesetas annually, besides subjecting the tenants of store yards and other outside buildings, on that particular part of the garrison territory, to constant vexatious police interference, with the view of preventing any abuses being committed in harboring tobacco within the British lines in favor of the Spanish smugglers.—GIBRALTAR, *July 2, 1888.*

HORATIO J. SPRAGUE,
Consul.

EGYPTIAN RAILWAYS AND TELEGRAPHS.

As presented in a former report, the railways and telegraphs of Egypt were built by its Government, they belong to the Government, and are operated by it under the direction of three commissioners. The international agreement concerning the composition of this commission is, that it shall

consist of two foreigners and one native. A year ago, without any revision of this agreement, the native commissioner was removed and a foreigner put in his place. The commission has since been composed wholly of foreigners, and no foreign power has entered a protest.

Five-sixths of the railway mileage of Egypt was built under Ismail Pasha. There has been no extension since his removal from the Khediviate, and there is no prospect of extension.

The commission's report for the year 1887 shows that there is at this time in operation only about nine-twelfths of the mileage originally completed. In 1887 there were operated 900.56 miles—the same as for five years past.

A great portion of the telegraphs originally constructed have been abandoned—the entire Soudan system, from Wady Halfa southward, and the greater part of the Red Sea service.

Besides the railways and the telegraphs the commission has attached to its administration the port of Alexandria.

Total receipts are as follows:

For 1887	£ E. 1,452,250
For 1886	1,419,492
Total increase	32,758

Analyzed, this result is obtained in the following manner:

Increase in railways	£ E. 30,272
Increase in port of Alexandria	4,665
	35,037
Decrease in telegraphs	2,279
	32,758

The commercial work of the railways has been as follows:

	1886.	1887.
Cotton	£ E. 164,361	£ E. 165,222
Cotton seed	86,922	90,230
Cereals	93,402	127,133
Sugars	46,399	42,255
Molasses	8,143	7,928
Animals	5,396	5,798
Coals	72,726	76,490
Divers articles	294,179	276,018
Totals	771,528	791,074

Comparison shows an increase in commercial work for the year 1887 of £ E. 67,943.

The number of persons traveling on the railway lines in 1887 were as follows:

First class	77,225	£ E. 39,594
Second class	384,082	79,432
Third class	2,692,548	247,749
Military	90,257	16,959
Total	3,244,112	383,734

The total number of passengers in 1886 was 3,138,810, and the receipts £ *E.* 390,514.

The total accounts of the administration for 1887 are most elaborately classified in the report, but I see no necessity in presenting them in this statement more extendedly than as follows:

Receipts.

Railways	£ *E.* 1,305,680
Telegraphs	34,891
Port of Alexandria	111,679
Total	1,452,250

Expenses.

Railways	£ *E.* 567,035
Telegraphs	38,824
Port of Alexandria	27,762
Total	633,621

Of receipts, there were turned over to the Caisse de la Dette Publique £ *E.* 779,127, and to the finance department £ *E.* 7,009, the remainder being converted to rights acquired, etc. The large sum annually set apart for the public debt, under mortgage to European bondholders, diverts almost the entire earnings from improvements, and the result is that the roads are not in good condition. The nature of the country and the climate preserves the beds much longer than in other countries. The rolling stock is very inferior, and much of it in very bad condition.

It may be of interest to state that in 1887 there were transmitted over the Egyptian telegraph wires 601,861 messages, of which 335,798 were service and the remainder paid messages. Of the latter there were 113,004 internal messages in Arabic and 131,142 in European languages. The balance were messages sent to foreign countries.

The administration of the port of Alexandria has grown rapidly from a point of insignificance to one of importance, as shown by the following table of figures presenting receipts and expenses since May 19, 1879, when the administration began:

Year.	Receipts.	Expenses.	Net receipts.
	£ *E.*	£ *E.*	£ *E.*
1879	23,819	2,950	20,869
1880	52,031	8,814	43,217
1881	72,046	14,168	57,878
1882	66,659	18,791	47,868
1883	70,597	31,378	39,219
1884	83,408	35,279	48,129
1885	96,991	24,277	72,714
1886	107,013	30,987	76,026
1887	111,679	27,762	83,917

NOTE. — "£ E." stands for Egyptian pound. In one pound there are 100 piasters, and one piaster is the equivalent of 4.9641 cents; one pound, therefore, is $4.9641.

A classification of receipts is also of interest. This is presented as follows:

Year.	Tonnage.	Wharfage.	Ballast.	Rental.	All others.
1880	35,219	12,418	2,087	.....	2,318
1881	31,437	33,456	2,475	2,332	2,346
1882	28,894	28,904	1,527	4,661	2,672
1883	28,732	32,076	2,083	5,078	2,628
1884	35,974	33,446	2,486	6,807	4,696
1885	36,565	46,022	2,504	8,532	3,368
1886	36,022	57,017	2,181	9,741	2,052
1887	38,771	59,962	1,571	8,973	2,402

The following table shows the entries and departures of vessels at the port of Alexandria for the same period as is embraced in the tables presenting receipts and expenditures:

Entrances and clearances of vessels at the port of Alexandria for the years 1880 to 1887, inclusive.

Years.	Entries.					
	Steamers.	Tons.	Sailing vessels.	Tons.	Total.	
					Vessels.	Tons.
1880	1,045	1,008,817	1,307	184,704	2,352	1,193,521
1881	1,074	1,068,204	1,291	179,803	2,365	1,247,907
1882	1,058	1,095,233	903	124,444	1,961	1,219,677
1883	980	1,028,902	792	125,071	1,772	1,153,973
1884	1,114	1,279,232	1,124	188,733	2,238	1,467,965
1885	1,118	1,347,965	1,203	186,442	2,321	1,534,407
1886	1,084	1,340,026	1,183	172,900	2,267	1,512,926
1887	1,197	1,468,274	1,031	149,762	2,228	1,618,036

Years.	Departures.					
	Steamers.	Tons.	Sailing vessels.	Tons.	Total.	
					Vessels.	Tons.
1880	1,067	1,037,661	1,266	183,074	2,333	1,220,735
1881	1,073	1,074,796	1,323	177,098	2,396	1,257,894
1882	1,027	1,061,501	872	127,130	1,899	1,188,631
1883	986	1,036,697	781	122,279	1,767	1,158,976
1884	1,101	1,262,461	1,107	183,214	2,210	1,445,675
1885	1,121	1,369,283	1,182	174,363	2,303	1,543,646
1886	1,091	1,347,649	1,170	171,082	2,261	1,518,731
1887	1,191	1,462,502	1,045	152,026	2,236	1,614,528

CAIRO, EGYPT, *June 16, 1888.*

JOHN CARDWELL,
Consul-General.

The following table shows the percentage of the total exports of the under-mentioned countries exported to the United Kingdom, Germany, France, and the United States, respectively, in the under-mentioned years:

Country or group.	To the United Kingdom.		To Germany.		To France.		To the United States.	
	1875-'77.	1884-'85.	1875-'77.	1884-'85.	1875-'77.	1884-'85.	1875-'77.	1884-'85.
	Per Ct.	*Per Ct.*	*Per Ct.*	*Per Ct.*	*Per Ct.*	*Per Ct.*	*Per Ct.*	*Per Ct.*
European countries...	23	22	17	20	14	15	3	4
Egypt.....	73	64	.....	.....	11	9	.....	.....
American countries...	52	50	8	8	8	9	5	6
China	42	35	.....	....	.....	.....	10	14
Japan	10	9	.....	1	.....	20	40	42
British possessions...	49	43	0.2	0.4	3.8	4.9	6.4	7.9

MANUFACTURE OF PROPELLER BLADES.

[From Glasgow Daily Mail, July 5, 1888.]

It will be remembered that at the twenty-ninth session of the Institution of Naval Architects, the Earl of Ravensworth presiding, a paper was read by Mr. W. C. Wallace "On the material best suited for propeller blades." Mr. Wallace, as a matter of cost, found that cast-iron was £24 per ton; steel, £38; gun-metal, £130; manganese bronze, £135; phosphor bronze, £170; Delta metal, £115; and aluminium bronze, £145. This showed very much in favor of cast-iron and steel for first cost. The life of cast-iron blades, apart from accidents, is about six years, and of steel about four. In the discussion which followed, Admiral Colomb said he had been horrified at the amount of corrosion and pitting in cast-steel propeller blades. Mr. J. F. Hall, of Messrs Wm. Jessop & Sons, Limited, Sheffield, expressed the opinion that as all the corrosion—or rather pitting—took place at one particular part, on the idle side of the blades, it was occasioned by the sucking tendency caused by the blades always working in the same direction, and thus in time drawing out of the steel the particles or molecules which had not sufficient affinity in themselves to hold together as corrosion went on. He considered this to be entirely due to the use of so-called mild or soft steel. He had always thought it a mistake to make steel blades too soft. If he were asked his opinion as to the best material for propeller blades, he should advocate the use of a steel of very high tensile strain, say from 70 to 75 tons per square inch, with an elongation of from 7 to 10 per cent. in 10 inches, and capable of bending to an angle of 50 degrees. Such a steel could now be produced, and, if required, he was prepared to make it. * * * As already indicated in the discussion given above, and well known to sea-going engineers and ship-owners, corrosion very quickly sets in upon the backs of propeller blades, and to a much greater degree in steel than in cast-iron, and no efficient remedy has previously been found for it. The first cost of manganese-bronze or gun-metal blades will always be a serious consideration with ship-owners, and, therefore, the improvement of iron and steel blades is of the first importance. Mr. Willis' invention consists in a coating of copper united to the casting, this being effected by the copper plate, properly bent to shape, being placed in and forming part of the mold, into which the iron or steel is then poured, with the result that the copper is firmly united by fusion to the iron or steel face. Some samples of steel and copper united in this manner have been inspected by us. The joint appears to be perfect, the steel and copper being fused together and firmly united. The patent covers all anti-corrosive metals, several of which are now undergoing tests to ascertain the most suitable for this purpose. We understand that several blades with the backs protected by a copper coating to Mr. Willis' patent are in process of manufacture in Sheffield. The blades, we may add, may be totally covered, if considered desirable.

GENERAL NAVIGATION OF FRANCE.

The French customs authorities have just published the following table of general navigation of France, viz, navigation to distant ports and great fisheries, but excluding coasting trade:

	Tons.
Marseilles	6,615,803
Havre	3,549,114
Bordeaux	2,006,898
Cette	1,370,540
Dunkerque	1,302,952
Rouen	977,586
Calais	917,725
Dieppe	751,979
Boulogne	774,359
St. Nazaire and Nantes	777,111
Bayonne	239,519
Nice	124,121
Total	19,407,707

The same paper for the same year states the general navigation of Germany to have been 20,122,348 tons, exceeding that of France by about 700,000 tons. — HAVRE, FRANCE, *July 13, 1888.*

F. F. DUFAIS,
Consul.

TREATMENT OF DISEASES OF THE VINES IN FRANCE.

I find upon investigation that remedies and treatment, like their instigating causes, are boundless. I shall therefore confine myself to such treatments as have in whole or part proved successful and are most generally practiced.

PHYLLOXERA.

This apparently invincible invader, tenaciously clinging as long as the vines show vitality, should be designated as king of vine diseases. In spite of the many inventions specially aimed at its destruction it continues its progress of destruction. Some few years ago the French Government offered a prize of 300,000 francs to the fortunate inventor of a remedy or means that would rid the vineyards of this plague. Men, and not a few women, from nearly every civilized country of the globe diligently and patiently exerted their best efforts towards obtaining this tempting prize. Among the many inventions several are from America; one of which, owing to the original and rational method of its application, has recently interested me very much. Mr. L. H. Davis, the inventor, claims that the most feasible way of destroying phylloxera is by attacking the insect indirectly through the sap of the vine upon which it exists. He therefore simply inoculates the vine with his preparation through a carefully made incision on the stock of the vine, which is immediately closed. The sap becomes thoroughly impregnated, the insect feeds, and unconsciously takes his death potion. Mr. Davis claims that his chemical composition not only destroys phylloxera but enriches the soil, owing to its valuable fertilizing qualities. The treatment has lately been applied to some vines near Marseilles and at Pauillac, France, but so recently that at this writing I can not speak of the results. Dr. Griffin has devoted several years' study to this interesting subject. He has invented an ingenious distributing machine for either a liquid or dry composition which he has

discovered, and which he believes is the long sought for phylloxera annihilator. Last year he had one of the vineyards belonging to the French Government placed at his disposal for experimental trial. He operated upon the vines, and is gratified this spring to find the vines treated by his process vigorous and flourishing in the midst of others dying from the ravages of phylloxera.

Of the many remedies in vogue, the most generally employed are submersion (for a period of not less than forty days) in carbon of sulphur dissolved in water. Like all innovations this latter treatment was looked upon with great distrust. Fears were entertained that its employment would destroy the soil. The excellent work of Messrs. Gastine and Couanon made known its value, explained its direct and rational application, and its effects upon the vine and soil, so that to-day it is generally used in preference to all other treatment, and all fears regarding its use are dissipated. It is impossible to give the exact amount of carbon of sulphur necessary to a certain extent or number of vines, as the degree of strength varies according to the character of the land, *i. e.*, on light permeable soil a strong mixture is used, as the solution rapidly filters through; on stronger soil a weaker solution is applied, as it reaches the roots by slow degrees, thoroughly impregnating the soil in its progress. A remarkable evidence of the efficacy of this treatment is that it is also extremely effective in damp, low land.

LOSS SUSTAINED BY FRANCE IN CONSEQUENCE OF PHYLLOXERA.

It is a widely-known fact that in the past few years the vineyards of France have produced yields insufficient for home and foreign consumption; that French wine growers and dealers have depended largely upon importations of foreign wines and dried grapes to supply the deficiency. Few persons, however, have an idea of the exact loss sustained by France as a consequence of the ravages of phylloxera.

From official statistics, the surface of vines totally destroyed by this indomitable plague is placed at more than 1,000,000 hectares, with 664,511 hectares of diseased vines, which, estimated at most favorable average, are calculated as an additional 200,000 hectares of dead vines. The actual area of destroyed vines is 1,200,000 hectares, or about one-half of the vineyards of France.

As no radical cure or exterminator of phylloxera has yet been discovered, the future of French vineyards is not only gloomy, but is to-day almost an insolvable problem.

The relative value of the property destroyed is from a national point of view inestimable. To proprietors, and those dependent upon the wine industry as a means of livelihood, the destruction of the vines is incalculable, as the naked ground has but a minimum value, owing to its unsuitable condition to grow other crops.

It is generally estimated that a hectare of vines represents a money value equivalent to 6,000 francs. Taking this sum as a basis, I find that so far France has sustained a loss of 7,200,000,000 francs as a result of vines destroyed. To this may be added loss of private revenue and wages, which

latter are difficult to estimate, but which may, to a certain extent, be determined by the amount of foreign wines and dried grapes annually imported into France for the sole purpose of supplying the deficit in the home yield.

Below is a tabulated statement of wines and dried grapes imported into France from 1875 to 1887, inclusive.

Years.	Ordinary wines. *Francs.*	Dried grapes. *Francs.*
1875	8,351,741	5,755,614
1876	18,408,811	5,447,204
1877	22,593,989	8,649,482
1878	50,204,145	14,829,096
1879	107,479,899	40,807,043
1880	297,917,248	62,631,970
1881	346,516,425	37,364,289
1882	295,207,947	31,903,088
1883	360,000,000	39,000,000
1884	319,664,326	49,644,909
1885	361,476,779	95,350,824
1886	489,985,194	88,422,465
1887	545,000,000	98,000,000
Total	3,222,806,504	577,805,984

It will be seen by the above that 3,800,612,488 francs have been expended for foreign wines and dried grapes, which, added to the 7,200,000,000 francs reckoned as values of vines totally destroyed, shows an approximate loss of more than 10,000,000,000 of francs as a consequence of the phylloxera, which has also been one of the principal causes of the stringency in agricultural, industrial, and commercial affairs during the past few years.

OIDIUM.

The application of sulphur, pure or mixed with other properties, is considered of greatest importance by the French viticulturist in combating the spread of oidium. Like phylloxera, no positive remedy has yet been discovered which entirely controls it. The use of sulphur in various forms has a restraining effect upon the disease, but at the same time aids fructification and vegetation of the vine. The benefits derived from the employment of sulphur are such that it will be used in the vineyards independent of the presence of oidium. It has an efficacious effect upon the vine; the wood becomes healthier, vegetation more vigorous, produces a greener tint, causes the leaves to remain longer upon the vines, and produces a more advanced and equal maturation.

From 1834 to 1854 the vintage was generally from the 10th to the 25th of September. In consequence of the present early maturity the vintage is usually from the 1st to the 15th of September. It is also a noted fact that the sulphur affects the coloring matter of the grape, which gives a richer and deeper color to the wine. The direct influence upon the seed of the grape appears difficult to explain. It is well known that sulphuric acid is used in clarifying and adding more brilliancy to wines, but never as a means of

accentuating the color. To improve the color of red and black table fruits, a light sprinkling of sulphur is frequently employed at the moment of maturity. This has long been known to viticulturists, who accept the fact without being able to explain the cause. If, however, grapes for wine are sulphureted too late the wine is contaminated in taste and color. It is therefore advisable to apply the last sprinkling of sulphur at least a month before the vintage, as the grapes protect themselves from the oidium after veraison.

PERIOD OF SULPHURING.

The development of the oidium is slow. The first application of sulphur, distributed as a fine powder, should be made at the earliest possible moment, even before the parasite discloses itself. A second sulphuring is almost indispensable at the moment of budding. When vines are treated yearly, two applications of sulphur at the periods mentioned may be sufficient, but it is rare when a third application is not made. The periods of sulphuring vary according to the early or backward season. The first application should be made when the young branches are about 5 inches long; second, when the vines begin to blossom; third, a few days before maturity; fourth, such time between the above-mentioned period as may appear necessary to the vine grower. No special hour of the day is selected for this duty; only windy weather is to be avoided. Pure sulphur should be used in the two first applications; sulphur and lime mixed may be used on any subsequent occasion. The lime has a cooling influence and prevents too great heat upon the vines from the combined action of the sulphur and sun.

MILDEW.

Up to 1885 no satisfactory treatment had been discovered to operate against the spread of mildew. During the last two or three years salts of copper has been successfully employed, but there are doubts as to the effectual benefits of this remedy. An incontestable fact, however, remains, that no other remedy or substitute produces such satisfactory results.

As mentioned in a former report, the most generally accepted method of fighting this disease is by plucking from the vines all leaves bearing the faintest trace of mildew and immediately burning them. Leaves which may have fallen to the ground should be carefully gathered, as one diseased leaf can infect an entire vineyard. Several vine growers adopted the plan of letting sheep into the vineyards and feeding the diseased leaves to them. This is considered inadvisable, as the disease reappears in a more vigorous condition in the droppings of the sheep. The favorite and principal articles used to combat mildew is, first, salts of copper; second, bouillie bordelaise; third, eau célesté (celestial water); fourth, ammoniate of copper; fifth, verdigris and powdered sulphate of copper.

BLACK ROT.

Owing to the comparatively recent appearance of black rot, treatment towards its extermination has so far consisted only in experimental trials, the most satisfactory of which is gathering and burning all infected leaves and

short branches, paring off and burning the soil, singeing the vine with kerosene, washing with a solution of concentrated sulphate of copper, and applications of bouillie bordelaise and eau célesté. The disease increases in spite of most assiduous care and treatment, but does not discourage the persevering French vine grower, who is ever alert and hopeful of arriving at a remedy that will vanquish this destructive evil.

ANTHRACNOSE.

If means are employed early in the spring, even before the vines begin to bud, this disease may in a measure be controlled, and its presence produce but inconsequential damage. The curative means employed on the vines in vegetation which have given the best results, are repeated applications of sulphur, lime, or, better still, mixtures of lime and sulphur, plaster and pulverized sulphate of iron. These attempts, though crowned with relative success in many vineyards, have not caused the total disappearance of the disease. The results, however, have been sufficiehtly encouraging to warrant the continued use of the above-mentioned means, combined with the preventive treatment of concentrated sulphate of iron or diluted acids. When vegetation of the vine begins, sulphuring is almost indispensable. It should be repeated two or three times, at intervals of eight days. In the first sulphurings only a moderate quantity should be applied, owing to the slight development of the young shoots. When the vine is in full vegetation, and when the anthracnose is very far advanced, the employment of sulphur not only becomes an almost useless operation, but an extremely expensive one. The application of sulphur is more efficacious when the condition of the atmosphere is dry. When the disease is in full development the use of sulphur alone must be renounced, but very finely pulverized lime is employed, which is distributed upon the vines by the same machine which is used in sprinkling sulphur. The application should be made in fine, dry weather, so that the wind can not diffuse the powder. The mixture of sulphur and lime produces more satisfactory results than lime alone, which is hurtful to the young shoots and buds. The treatment is applied as follows: The first sulphuring is given when the shoots are from 4 to 5 inches long. If lesions appear or develop, the operation is repeated in ten or fifteen days, using a strong mixture of lime and sulphur, the proportions being from one-fifth to three-fifths of lime. In 1886 many vine growers of the Medoc made two applications of sulphate of iron, the first early in February and the second a month later. These experiments demonstrated that this system is superior to that which consisted in only once washing the vines. The second application destroyed the egg that escaped under the first treatment. Eight quarts of liquid is sufficient to treat 100 feet of vines. The action of air produces oxidation of iron, which causes the surface of the stock to change to a brown or dirty yellow-brown color, which, however, in a short while, disappears without producing a harmful effect. Another simple preventive against the spread of the disease is, in planting vineyards care should be taken to reject all plants susceptible to anthracnose, and replace them by other hardier

varieties. If the anthracnose appears only in old vineyards recourse may be had to grafting, as the disease is usually so advanced that other treatment is useless in arresting its progress. Damp land should be well drained, thus permitting the air to freely circulate through the otherwise choked vines. During the winter such branches showing lesions should be cut from the stock and burnt, as they envelop the germs of the disease.

POURRIDIE.

The fight by direct means against parasites subsisting upon the roots of the vine is always difficult. It is doubly so against the mushroom, which develops in the interior of the tissue and can not be destroyed without destroying the organs involved. Many remedies proposed against pourridie are not only extremely expensive, but the use of them renders the soil unproductive. The only really efficacious means of subduing this evil is by removing and burning all roots showing trace of the disease, as it is impracticable to treat vines already diseased. New vines should not be immediately planted in soil lately occupied by diseased plants, as the young vine will be at once attacked and destroyed. Vines susceptible to this disease should be planted in dry land, as it has been observed that the evil spreads with remarkable intensity in low, damp land.

ERINNOSE.

Like mildew, no more efficacious treatment is known to combat erinnose than repeated applications of sulphur, whitewashing the plants in winter to destroy acariens which lodge under the bark and at the base of the bud—in the spring trimming off new shoots when they reach the length of 4 or 5 inches.

I have embodied in as limited a space as possible the most generally employed means of combating such diseases of the vines as are most destructive. Toads are very valuable as insect-destroyers, as they are determined enemies of all kinds of snails and slugs, which, as is well known, can in a single night destroy a vast quantity of vegetation. They are almost indispensable in vineyards, where they devour during the night millions of insects that escape the pursuit of nocturnal birds, and might commit incalculable havoc on the buds and young shoots of the vine. In the markets of France toads are an article of merchandise. They are kept in tubs and sold at the rate of two francs a dozen.

The vineyards through the famous Medoc region, owing to a late but mild spring, unaccompanied by violent storms, are in a most promising condition. The vines are in full vegetation and the fruit gives promise of an abundant harvest. On June 6 a heavy hailstorm swept over a portion of the Dordogne and destroyed nearly half of what promised to be a famous yield.—BORDEAUX, FRANCE, *June 26, 1888.*

GEO. W. ROOSEVELT,
Consul.

QUARANTINE REGULATIONS OF THE REPUBLIC OF COLOMBIA.

[Transmitted by Minister Walker.]

ARTICLE 1. All vessels arriving at Colombian ports with infectious or contagious diseases on board, or with an unclean bill of health, shall be declared in quarantine.

ART. 2. For the purposes of the preceding article cholera, yellow fever, small-pox, and plague are to be considered contagious and infectious diseases.

ART. 3. In like manner a vessel is to be considered to have an unclean bill of health when it has cleared from or touched at any port, or received on board merchandise or passengers from the same, infected by any of the diseases mentioned in the preceding article.

ART. 4. No vessel can be placed in quarantine without a decision founded on cause. This decision shall be communicated without delay to the captain or person in charge of the vessel.

ART. 5. A vessel before or after being placed in quarantine may go to sea; but it shall be stated in her clearance papers the state in which she is found and the reason for her departure.

ART. 6. The duration of the quarantine shall be the same for the vessel, persons, and merchandise on board. There shall be a distinction between quarantine of observation and absolute quarantine.

ART. 7. For vessels, and whatever may be on board of them, a quarantine of observation shall be considered to have commenced the moment the agent of the authorities takes cognizance of the unclean bill of health, and adopts measures for their ventilization and purification. Absolute quarantine shall date — for the vessel, the crew, and the persons, and things on board, from the time the merchandise subject to disembarkation shall be landed; for the merchandise disembarked at the lazaretto, or the place selected for its purification, or for the persons disembarked — from the moment of their entrance into the lazaretto. A quarantine commenced on board may always be continued in the lazaretto.

ART. 8. The quarantine of observation shall be limited to observing, during a prescribed period, the ship, crew, and passengers, and does not require the disembarking of the merchandise at the lazaretto. Quarantined persons may remain on board the ship or at the lazaretto, as they may elect. While a vessel is in quarantine it shall be kept at a distance and watched by a guard of sufficient number, and will be subjected merely to sanatory measures, such as proper ventilation and washings necessary to cleanliness.

ART. 9. Quarantine of observation shall continue for eight complete days for cholera and ten for yellow fever.

ART. 10. Absolute quarantine shall add to the quarantine of observation the necessary special measures of purification and disinfection which may be judged necessary by the sanatory authorities. Besides the cases specified in these regulations said authorities may impose the disembarkation at the lazaretto of merchandise of the first class, and, according to local regulations, merchandise of the second class.

ART. 11. Whatever is in quarantine on account of the plague can only be purified at the lazaretto or place designated for that purpose. Whatever is imposed upon a ship for uncleanliness may be purified in an isolated part of any port.

ART. 12. The necessary quarantine may be undergone at a port intermediate between the port of departure and the port of destination, and by producing proof of this quarantine the vessel will be admitted to free *pratique*.

ART. 13. The duration of the passage shall be reckoned for all vessels from the moment the departure is noted in the log-book, attested by the captain or person in charge of the vessel.

ART. 14. Every vessel, on board of which there was during its passage a case of a disease considered importable or transmissible, shall be regarded as having an unclean bill of health.

ART. 15. If there has been one or more cases of contagious disease during the voyage or while in quarantine the commencement of sanatory measures shall be reckoned from the moment of its arrival or the beginning of sanatory measures, without taking into account the duration of the voyage.

ART. 16. Hides, horse-hair, cotton, linen goods, or canvas in a bad condition must always be disinfected, even on a vessel with a clean bill of health. The authorities shall be judges of these measures, and shall determine its nature and duration.

ART. 17. The authorities shall have the right to order them destroyed by fire or thrown into the sea. The steps to be taken in such cases shall be determined by local regulations.

ART. 18. Merchandise coming in a vessel with an unclean bill of health shall be divided into three classes. The first class, which shall be subjected to an obligatory quarantine and measures of purification, shall consist of luggage and articles in use, canvas, drills, cotton and linen goods, hides, skins, feathers, horse-hair, animal remains in general, and materials of woolen and silk. The second class shall embrace cotton, linen, and hemp, and shall be subject to such quarantine as may be ordered. The third class, consisting of articles not embraced in the other classes, shall therefore be exempted from quarantine measures.

ART. 19. With an unclean bill of health on account of disease, merchandise of the first and second classes shall be disembarked always at the lazaretto and submitted to purification. Merchandise of the third class, being declared free, may be immediately liberated under the supervision of the sanatory authorities.

ART. 20. Merchandise on a vessel with an unclean bill of health, on account of yellow fever, without there having occurred any case on board on a voyage of more than ten days, shall be submitted to the hygiene measures of a simple ventilation before unloading. If there has been any case on board, or if the voyage has been of less duration than ten days, the merchandise may be the object of the same measures as merchandise on board a vessel with an unclean bill of health, for reason of disease; that is to say, it must be disembarked at the lazaretto and purified, but these measures will be optional and left to the discretion of the sanatory authorities.

ART. 21. In case of unclean bills of health, on account of the existence of cholera, merchandise shall be disinfected by the use of moist steam at a high pressure, if stoves are employed; if not, then in the manner prescribed for unclean bills of health in consequence of the plague.

ART. 22. In all cases of unclean bills of health, letters and papers shall be submitted to the purification in use, provided there are not stoves on board for their purification, by the use of moist steam at a high pressure, in which case they may be passed immediately.

ART. 23. All merchandise, or objects of whatsoever nature, coming from a healthy port contained in an official envelope, sealed in such a manner that they can not be subjected to purification, shall be admitted to free *pratique* immediately, whatever may be the ship's bill of health. If the envelope be of a substance with respect to which sanatory measures are optional, their admission shall also be optional.

ART. 24. Live animals shall be subject to quarantine and purification at the different ports.

ART. 25. All vessels without bills of health, when properly they should have had such from the place of departure, may be placed in absolute quarantine or quarantine of observation, according to the circumstances. The duration of this quarantine shall be fixed by the sanatory authorities, but it shall not exceed three days, provided the vessel comes from a place notoriously healthy and is in a good hygienic condition. Cases of superior force or the accidental loss of the bill of health shall be taken into consideration by the sanatory authorities.

ART. 26. Bills of health with erasures or amendations shall be considered null, and the vessels shall be placed in the condition indicated in the provisions of the preceding article, without prejudice, however, to the prosecution which may be instituted against the authors of such alterations.

ART. 27. If, during the period of quarantine, no matter from what place the vessel may have come, any case of contagious disease occurs the quarantine shall recommence.

ART. 28. In addition to the preceding quarantines and the specified measures, the sanatory authorities of all ports shall have the right, in the presence of immediate danger and without warning, to prescribe, upon their own responsibility, such measures as they may judge necessary to preserve public health. In absence of special establishments on land, vessels may be used as lazarettos, the same to be anchored and guarded in such manner as to prevent all communication with the outside.

REGULATIONS AND ARRANGEMENT OF LAZARETTOS.

ART. 29. The interior arrangement of the lazarettos will be such that persons and their belongings, goods, etc., of each quarantine, according to date, may be easily divided.

ART. 30. Large and spacious saloons shall be kept ready to receive persons visiting the quarantine, but every precaution necessary to preserve public health must be taken. Small lattice windows and everything that may have a damaging moral influence on persons under quarantine will be suppressed.

ART. 31. Buildings, or parts of buildings, will be arranged in each lazaretto and set apart for the use of the sick. They will be so arranged that the sick may be separated as required, so as to insure the best hygienic conditions, especially as regards ventilation.

ART. 32. Close communication with persons or things in quarantine, suspects, or reputed suspicions is prohibited. Besides the punishment laid down by law or regulations, persons who may have been in close communication with people or things in quarantine will be declared under quarantine, and treated as such. Exceptions to this rule will be made by the sanatory authorities, who are the sole judges in such cases.

ART. 33. Every lazaretto shall have a supply of wholesome fresh water in sufficient quantities for the necessities of the service. In lazarettos, and in their neighborhood, there will be proper places set apart as cemeteries.

ART. 34. The ports and other places destined for the quarantine of vessels, the lazarettos for passengers and merchandise, and in general everything undergoing the quarantine will be placed under the immediate control of the sanatory authorities.

ART. 35. In each lazaretto there shall be a director, or responsible agent, and a sufficient number of employés and guards to carry out the prescribed measures.

ART. 36. In each lazaretto there shall be a doctor to visit and care for those undergoing quarantine and to advise in the strict observance and execution of the prescribed sanatory measures.

ART. 37. The sick will receive in the lazaretto all the religious and medical services and care that are given in the best regulated hospitals, except that doctors and others giving such help may not be liable to quarantine.

ART. 38. Each patient may be attended by a doctor chosen by himself, although he may not belong to the lazaretto, but in this case his visits must take place in the presence of and under the supervision of the manager of the lazaretto. The authorities will, however, send the official doctor from time to time to visit the patient, to know the nature of the disease.

ART. 39. Paupers received as such by the sanatory authorities will not only be admitted but gratuitously fed and properly treated in the lazarettos.

ART. 40. Each lazaretto will have a tariff regulated by the authorities and revised every quarter, in which the prices of food will be arranged in accordance with the lowest prices.

ART. 41. Furniture and other strictly necessary articles for the use of the patients shall be gratuitously supplied by the authorities immediately after their entrance into the lazaretto.

ART. 42. The sanatory visits of the doctor shall be gratuitous. Those undergoing quarantine will be required to pay only for services foreign to the sanatory regulations.

ART. 43. Besides the general rules, the sanatory authorities, always watching over the public health, will take every precaution, by special regulations suitable to each locality, to insure as far as possible the well-being of those undergoing quarantine.

TREATMENT OF MERCHANDISE, ARTICLES IN USE, AND CORRESPONDENCE IN LAZARETTOS.

ART. 44. Merchandise will be deposited in special and dry store-houses. They will be well ventilated and shaken from time to time. Bales and cases shall be opened so that the goods may be well aired. This ventilation will be continued during the whole period specified as quarantine.

ART. 45. Merchandise belonging to different quarantines shall be separated, one from the other, and will be placed, if possible, in different store-houses.

ART. 46. Hides, skins, horse-hair, canvas, cotton and linen goods, animal matter, and woolen and silk goods will be deposited in places far away from those places occupied by persons under quarantine, as well as from the employés.

In cases of notorious infection, of uncleanliness, or deterioration, any of the above-mentioned effects or merchandise may be submitted to any process of purification judged necessary by the sanatory authorities.

ART. 47. Animal and vegetable matter in a state of putrefaction shall never be received in lazarettos; they shall be burned or thrown into the sea, in accordance with these regulations.

ART. 48. In each lazaretto there shall be a store-house for disinfected goods.

ART. 49. Passengers' baggage and effects shall be aired during quarantine in well-ventilated rooms set apart for this purpose and under the supervision of the guard of the lazaretto. The sanatory authorities shall take care that this shall not be neglected under any circumstances.

ART. 50. The personal effects, clothes, and all that may have been in use by deceased persons or by those suffering from the plague shall be submitted to a stronger purification—to chloride fumigations, to immersions in sea water, to the action of heat or sulphurous vapors—according to the circumstances and the nature of the articles. The same shall take place in every other contagious disease.

ART. 51. Letters and dispatches shall be purified in such manner that the writing shall not be altered.

ART. 52. This operation shall be performed in the presence of the director of the lazaretto.

ART. 53. Consuls or the representatives of foreign nations have the right to be present at the opening of letters and dispatches addressed to them or their countrymen. The postal authorities shall have the same privilege.

ART. 54. The measures for disinfection and purification alluded to in this law may be modified in accordance with the progress of science.

THE SANATORY AUTHORITIES.

ART. 55. These will consist, first, of a responsible agent of the Government, and, second, of a local sanatory council.

ART. 56. The agent essentially represents the central governmental power. He will be selected, as far as possible, from the medical corps, and will be styled "director of health."

ART. 57. The director or agent will be chief of the active service, and will bear all the responsibility. All employés will be under his orders. He shall watch over the execution of the sanatory laws; he shall survey, and order the survey of all arriving vessels; will grant clean bills of health to those leaving, and shall have the supervision and direction of the lazarettos and ports under quarantine.

ART. 58. The sanatory council shall especially represent the local interests, and will be made up of several administrative and scientific members, to watch, in each port, for the maintenance of public health.

ART. 59. The director or agent, in virtue of his office, will be a part of the council.

ART. 60. The council shall have a general supervision of the health service. Its special duty will be to enlighten the director or agent, and to advise him as to the measures to be taken in case of infection or danger of invasion of a disease reputed to be importable or transmissible; to watch over the execution of the general laws and regulations, or by-laws and

regulations touching the sanatory police, and when necessary to inform the Government of all infractions or omissions of these laws. It shall be consulted on all administrative and medical matters, and shall join the director in making local or interior regulations.

ART. 61. The council will meet periodically, at such time as may be fixed by the superior authorities, and will have extraordinary meetings whenever public health may require them.

ART. 62. It shall be the duty of the director or agent and of the council to be constantly kept informed regarding public health. To this end they will keep constant correspondence by delegates with the municipal administration, and will receive from them all the necessary communications to enable them to comply with their duty.

ART. 63. When the director and the council may not agree, the matter shall be referred directly to the government of the department; but in urgent cases the director, upon his own responsibility, will decree the provisional dispositions required by the public health or the service.

Given at Bogota, this 21st day of May, 1888.

C. MICHELSEN U.,
President of the Central Board of Health.

Approved for His Excellency the President of the Republic:

RAFAEL REYS,
Minister of Public Works.

THE SANITARY CONDITION OF CALCUTTA.

During the past year or more the subject of proper sanitation in Calcutta has been agitated by the municipal authorities and the public press to an extent that has awakened an unusual interest in the subject, and it has occurred to me that a few observations relative thereto might be of some public interest.

The municipality of Calcutta proper has a population of 433,219, and including the numerous suburbs the number reaches about 700,000. Of this population there are 13,806 Europeans, 9,658 Eurasians, and between 30 and 40 Americans, consisting of three mercantile firms, and the remainder principally missionaries.

The poor class of natives, like the same class of Chinamen, live, especially in the cities, in crowded and illy-ventilated tenement houses, located generally upon very narrow, crooked lanes, without, as a rule, any system of sewerage or drainage which is entitled to be dignified with the name of that essential sanitary appliance. Before leaving my home in Oregon for Calcutta I took occasion to read up as much as I could about the sanitary condition of this city, not having a very favorable opinion of the same from previous information obtained.

I recollect reading a very misleading article on the subject which I found in the Cyclopedia Britannica, which gives a very flattering account of the improved sanitary condition of this city and of its healthfulness as compared with former times and as compared with many European cities of the present day. There is some truth in the statements, but they are only partially correct. In the European residential quarters and in a small part of the business portion of the city as fairly good sanitary arrangements have been provided as the low and flat character of the country will allow. And where such hygienic precautions have been taken very encouraging results have followed, as the death rate in the different wards of the city shows.

It is also an encouraging fact, attested by the medical faculty of Calcutta and generally sanctioned by old residents here, that, as a rule, the Asiatic cholera (which seems to have a permanent abiding place in this city) does not extend in a very malignant form much beyond those localities which by their deplorable unsanitary conditions seem to invite its presence. I have been told by some of the most eminent physicians of Calcutta that they are generally able to trace the presence of cholera to local unsanitary conditions, the same as they would expect to trace typhoid or malarial fevers. And yet, to those who are most favorably located in a sanitary point of view, it is not very assuring to contemplate the fact that they are surrounded on all sides by a cordon of cesspools, which, to all appearances, must sooner or later breed a widespread pestilence. I refer particularly to the system of stagnant tanks (artificial ponds), many of which, under our tropical sun, are so completely covered with green slime that the reeking, filthy water which they contain is entirely hidden from view. In these tanks the poor native bathes, and often washes his clothing, and from them procures water for drinking and culinary purposes. The only wonder to me is that the death rate of these poor, misguided people is as low as it is. I say misguided people, because the majority of the native element in and out of the municipal council seem to be opposed, either on account of the expense involved or from their proverbial aversion to a change of conditions which have been long established, to any efficient and radical sanitary reform.

A severe outbreak of cholera in a British ship was traced last year by the intelligent and energetic health officer of Calcutta to milk which had been furnished said ship by a native vendor who *watered* the same from one of these poisoned tanks. When, by the rigid hand of municipal authority, these pestilence-breeding tanks are filled up and the entire population is furnished with good hydrant water—a limited and insufficient quantity of which is now supplied from the Hooghly River—and these steps are supplemented by further necessary and available sanitary requirements, we may expect Calcutta to become a fairly healthy city.

I feel safely warranted in saying that it would not be advisable for any person from the United States who is not possessed with ample means, or has not beforehand a reliable guarantee of remunerative employment, to come here with the hope of bettering his condition financially. I have seen enough of my unfortunate countrymen who have come to grief in India to feel it obligatory upon me to give this warning.—CALCUTTA, *June 2, 1888.*

B. F. BONHAM,
Consul-General.

SANITATION IN INDIA.

Mr. Justice Cunningham's lecture, at the Parkes Museum, has a special interest for Calcutta. In the course of his address he referred to the anxiety expressed by Sir Lyon Playfair, in the debate on the local Government bill, lest the interests of sanitation should be endangered by their transfer from the expert superintendence of the local Government board to bodies less qualified for the task. An analogous question, he observed, presented itself as to Indian sanitation; but the numerical interests concerned were vastly greater and the issues more fundamental. The problem in India was the preservation of 300,000,000 of people from

epidemics and preventable disease and mortality, which at present showed symptoms of increase rather than decline, and the practical question was whether the Government should make any series attempt to mitigate this evil or should abandon the attempt as impracticable. Such an abandonment would be the virtual surrender of one of the great functions of a civilized Government in promoting the well-being of its subjects, and would be inconsistent with the strenuous efforts made by the Government in other directions to counteract the great destructive agencies of invasion and famine to which the Government has devoted millions. The results of these agencies, however, were altogether insignificant as compared with the continuous effects of insanitation. The duties of the state were as imperative in the one case as in the other. Owing to the science of preventive medicine being a new one, and the officials having no training in cognate branches of science, there was a tendency to underrate its importance as compared with other branches of administrative work.

The objects of the Health Society of Calcutta, a society headed by all the principal physicians and men of science in that city, was to impress its importance on the public mind, and to secure its enlightened and systematic treatment. Criticism of such an order was no disparagement to the general excellence of the administration, which was a topic of legitimate pride and satisfaction to every Englishman. The views of the sanitary parties in India might be summarized in the following proportions: That the mortality of the population is vastly in excess of that of civilized countries, and in particular can not be calculated at less than 10 to 15 per thousand in excess of the English rates, an excess making at least 2,500,000 of deaths and 50,000,000 cases of severe diseases; that this excess, or a large portion of it, is preventable by practical means fairly within human competence; that the existing administrative machinery is powerless to make any impression on this excessive mortality, but that its tendency is rather to intensify it; that there are reforms which materially affect it which might be adopted without grievance to the people or detriment to the Government finances, and that it is the duty of the Government to adopt such reforms. As to the excessive mortality, the lecturer pointed out that wherever registration approached completeness there were high ratios of 30 per thousand and more, the central provinces ratio being 34 and the northwestern provinces 32; that many large areas with populations of a million and upwards showed ratios of 40 and 50 per thousand, and many towns and municipalities showed ratios of 40, 60, 70, 80, and even higher. Such ratios showed that the laws of health were being contravened on an enormous scale. A curious instance of the extreme prevalence of disease was shown in Calcutta, where, out of a population of 445,000 persons, no less than 325,000 were treated annually in public medical institutions. Coming next to preventability, experience proved that wherever effective sanitation was carried out the ratios of Indian mortality sunk at once to that of England.

The great mass of Indian mortality was occasioned by epidemic diseases, which are preventable or mitigable, and in England have either disappeared or sunk to insignificant proportions. The army sanitary commission gave what they call a "deplorable record" of 38,000,000 of victims within a single decade to such diseases. Coming to particular instances, the extraordinary reduction in the mortality of the European army from 69 per thousand to 12 or 14, and the invaliding ratio from 43 to 23, the cholera mortality from 9.24 to 1.17, showed what sanitation could do in the case of men newly exposed to a tropical climate. The reduction of the mortality in jails was equally remarkable. It is now about one-third of the former rate. In Madras the extraordinarily low ratio of 17.80 per thousand had been attained. The high ratio of over 100 per thousand in some Bengal jails pointed to active insanitary conditions of soil, structure, or mismanagement. Another striking instance is that afforded by those parts of Calcutta which have been properly sanitated, which would compare favorably with the best parts of London for healthiness, while the insanitary wards of the city are scourged with epidemics—are the perennial home of cholera—and the suburbs of Calcutta have long been a scandal, not only to the Bengal Government, but to English civilization.

As to the third point, there were, the lecturer admitted, financial difficulties, but considerable as was the pressure on the Imperial exchequer, owing to a combination of unfavorable influences, this pressure did not touch the general population and need not interfere with the

expenditure, which would insure immense improvements. The country was yearly increasing in wealth, as shown by the automatic growth of revenue. In any case insanitation was far from economical; disease is costly. Sir James Paget reckoned that it cost the English population between the ages of fifteen and sixty-five no less than twenty million weeks of work, valued, for the working classes, at £11,000,000, and for the professional and mercantile classes at a sum which defied calculation. In Calcutta it had been reckoned that the preventable disease and mortality cost the population an annual sum which might be capitalized at £750,000, or about three times the whole municipal revenue; and for India at large this loss could not be reckoned at less than £80,000,000, the whole revenue being only £76,000,000. As regards the general population, however, the army sanitary commission observed that in cholera, fever, and small-pox there was a marked tendency to augmentation. This tendency was in the case of the army in fever, and still more in contagious diseases, the admissive ratio for which had increased from 20.3 per thousand in 1879 to 34.3 per thousand in 1885. This state of things must be traced to the absence of control and guidance at headquarters. In India there was a fairly good observing and statistical department, but no central executive authority.

The royal commission had recommended provincial sanitary committees, but the experiment had been speedily abandoned. The absence of such a body was injurious alike to the Government and the general population. One instance of this was the enormous mortality occasioned in some districts by the introduction of canal irrigation without the necessary drainage. The admission rate of European troops at Delhi was 4.155 per thousand, and the death rate 25 per thousand, owing to the neglect to provide pure water. The reforms advocated by the health society are—(1) a central executive authority with the necessary expert element to control and assist municipal bodies as recommended twenty-eight years ago by the royal commission. (2) Increased provision for scientific research into the causes of disease. (3) A recurrence to the system in force in 187– of Government lending to municipalities, and the creation for this purpose of a Government local works stock. (4) More general instruction in sanitation, and the introduction of sanitation into the educational curriculum of civilian officers. (5) The creation of a committee in England who should effectively supervise Indian sanitation, keeping touch both with public bodies in India and with the various sanitary authorities in England, and thus competent to advise authoratively on matters of principle. In conclusion the lecturer pointed out that over-population in India was not a mere charge as there were still 79,000,000 acres of cultivable land not utilized, and the rate of produce might be increased so as to provide for an additional population of 400,000,000. The proper check on a possibly redundant population was not to allow it to be devastated by preventable disease, but to raise the general standard of comfort and encourage prudential habits which would delay premature marriage and check the growth of numbers beyond available means of sustenance.

TEA CULTURE IN NATAL.

A peculiar and fatal blight attacked the coffee-trees in Natal a few years ago, which induced some of the coffee planters to abandon that pursuit and to undertake the cultivation of the tea-plant instead. This experiment began in 1877–'78, during which a few acres were planted with Ceylon and other varieties of Indian tea seed. The result proved so encouraging that the area of tea cultivation was rapidly enlarged. Mr. J. L. Hulett, M. L. C., the originator and father of the new industry, being so well satisfied with the prospects foreshadowed by his first efforts, determined to devote his entire time and attention to its development, and has since gradually increased the acreage of tea-plants on his estate (Kearsney) till now he has about 230 acres, 100 of which are in full yield this season. The yield of last year's crop was 54,000 pounds.

Mr. Hulett has established a plant on his estate for the preparation and manufacture of the tea, which, being operated on the central factory system, is used by the neighboring planters. About $5,000 has so far been expended for machinery, consisting of Greig's link and screw rolling machines, Davidson's sirocco, a hot-air blast drying machine, sorting machines, etc.

The ground under tea culture is situated 1,000 feet above sea level, possessing a deep soil with a fair proportion of sand and decomposed granite, vegetable, and other organic matter. The land selected is generally open and level, and is well plowed. The rows are then laid out about 5 feet apart, and the plants are placed therein 4 feet 6 inches apart. If the planting is successful a small crop may be obtained after the first year, which will increase in quantity from year to year until the maturity of the plant, which is attained the sixth year, and after which it will continue to yield for an indefinite period, according to the care bestowed upon it. During the whole period of growth the greatest care is used to keep the ground loose and clear of grass and weeds.

Picking commences in September, that is after the dry season has passed, and is continued every ten days or three weeks till June, according to the season. A good season will yield from 20 to 22 pickings, or "flushes," as it is called, and a poor one only 17 or 18. The picking is performed almost entirely by Hindoo Indians or Coolies, of which the colony of Natal contains about 30,000. It is declared by Mr. Hulett and other tea planters of Natal that without this Hindoo labor, and to be dependent upon native labor alone, it could never be hoped to make this new industry a success. The reason assigned for this is that the Kaffir is so erratic and unstable in his habits and disposition, and so frequently engrossed in the affairs of his own domestic relations, that he can never be relied upon to keep his engagements for the morrow; whereas the Hindoo immigrant is patient and industrious, rarely showing an inclination to wander beyond the field of his labors, is tractable, docile, and never discontented, and may always be depended upon during the busiest as well as the slackest season. A Hindoo will pick from 35 to 40 pounds of green tea leaves per day, while a native will gather not exceeding one-half that quantity.

The several processes through which the green tea leaf passes in its preparation for market and use consist of (1) withering, (2) rolling, (3) fermenting, (4) drying, (5) sorting, and (6) packing.

1. The object of withering is to allow the leaf to roll or curl easily, and to prevent its breaking up during the rolling and drying processes. The leaf is first laid upon the withering floor, and then spread out in thin layers, and constantly turned and stirred about by Indian boys and girls. This operation is most expeditiously and satisfactorily performed when the temperature is hot and dry.

2. Rolling is the next stage, the object of which is to break up the juice cells of the withered leaf, and thus allow of fermentation taking place. This operation is performed by a machine called "Jackson's tea roller," which moves with a double eccentric action, and works like two human hands (of

which it takes the place) rolling together. This is a great labor-saving apparatus, performing the work of eighty pairs of hands in one day. After having been sufficiently rolled, the leaves, in a sticky condition, fall from this machine into large trays, and are carried to the fermenting tables.

3. Now comes the most important and critical stage of all manipulations; the quality of the tea greatly depends upon the fermentation being arrested at the proper time, and it is necessary to have drying machinery capable of receiving rapidly all the tea as fast as it is sufficiently fermented. If over fermented the tea is depreciated both in color and quality. It is preferable to have the tea under rather than over fermented.

4. From the fermenting tables the tea is passed through the dryer, which consists of a long cylinder or tube, 2 feet in diameter, with a flue in the center which can be raised or depressed. This cylinder revolves at a rapid rate, keeping the tea in constant motion, thus preventing it from burning, which would otherwise occur, as the heat is very intense. The tea is driven through the heated air of the cylinder by a fan, and the leaf as it dries becomes rounded and gravitating to the lower end of the machine is collected in trays, and now, for the first time, presents the appearance of tea as we are accustomed to see it.

5. Sorting consists of passing the dried leaves through a series of graduated sieves, which, being kept in motion by an eccentric action, sifts and divides the tea into the various grades. The top sieve having the largest meshes, that which remains in it after the vibratory sifting is the coarsest, and is called "Souchang," and is the lowest grade. What remains in the second sieve is called "Pekoe Souchang"; in the third, "Pekoe," and in the fourth, "Flowery Pekoe."

6. The packing process is very simple though important. The tea is first weighed in single pounds, covered with tea lead, and labeled according to the quality of the tea. It is then placed in boxes lined with tea lead, of from 5 to 50 pounds weight, to suit the requirements of the trade. The expense of these packing-boxes, which otherwise would be considerable, is reduced to a minimum in consequence of a suitable wood for the purpose growing in large quantities immediately contiguous to the tea estates. No attempt has been made to introduce Natal teas into foreign markets. Indeed no necessity has existed for so doing, as the demand at home thus far has been fully equal to the entire production. Mr. Hulett assures me that he can dispose of his entire crops in the Durban market at prices 25 per cent. cheaper, quality for quality, than the foreign article can be laid down there for, and at the same time realize a splendid profit on his labor and outlay. On his estate, Kearsney, this year he will make between 80,000 and 90,000 pounds of tea, all of which has been already disposed of at prices ranging from 18 cents to 38 cents per pound, according to quality. Indications now seem to point to Natal as one of the great tea-producing countries of the future. — CAPE TOWN, AFRICA, *June 19, 1888.*

JAS. W. SILER,
Consul.

THE AMSTERDAM DIAMOND-CUTTING TRADE.

Her British Majesty's Consul Robinson, in a report to the foreign office, writes: "The trade was in a decidedly unhealthy state throughout the year. Prices of cut diamonds were disproportionately low as compared with those of the raw material, and, in several cases, stocks of cut goods had to be cleared off at a very great sacrifice. The speculation in South African diamond shares has possessed itself of our diamond market, and there is more gambling in these than legitimate trade in the diamonds themselves. There has been a large increase in the number of mills, simply as a speculation, in order to let them to the cutters. In consequence of this, the rents paid by the cutters have fallen considerably. On the whole, there was fairly sufficient work for the greatly increased body of workers; with the exception of the less skilled class, wages remained on about the same level as in 1886."

EGYPT'S TOBACCO SUPPLY.

Owing to a report made by me to the Department of State regarding the imposition of a tax on tobacco production in Egypt, which has been widely published in the press of the United States, I have been the recipient of many letters from tobacco men in Virginia, Kentucky, North Carolina, Missouri, Illinois, and other States, soliciting information of a character illustrative of Egyptian tobacco trade.

The report above referred to was written in view of the promulgation of a Khedivial decree imposing a tax of £ E. 30 per feddan, equal to $157.50 per acre, on tobacco cultivation throughout Egypt. This tax being virtually prohibitory, and the annual crop of Egypt being 6,500,000 pounds, while the consumption reaches 13,000,000 pounds, I thought I saw an opening for the sale of American tobacco to Egyptians, and it was with this object that I made known the decree and presented probabilities bearing upon its execution. When the decree was promulgated some tobacco had already been planted, and upon appeal the tax upon this was reduced to £ E. 10 per feddan. Even with this reduction a great portion of the planted tobacco was destroyed by the cultivators, while some was left to mature. This will leave a small unestimated home production for 1888, which will soon be exhausted; therefore the increased foreign demand must begin by or before next September. For the introduction of foreign-made cigars the Egyptian Government, through an arrangement made since the promulgation of the decree taxing the production of tobacco, has granted a monopoly, to last for a term of three years. Conventional rights allow this concession of monopoly, which might, indeed, be extended to the importation of all tobacco. The following table shows the principal imports of tobacco and cigars into Egypt, and the countries exporting the same:

TOBACCO.

Country.	Tobacco.			Cigars.		
	1885.	1886.	1887.	1885.	1886.	1887.
	Kilograms.	*Kilograms.*	*Kilograms.*	*Kilograms.*	*Kilograms.*	*Kilograms.*
England	756,502	439,271	190,470	3,509	5,429	3,025
English Mediterranean possessions	216,586	454,684	147,207	59,080	56,717	38,013
Turkey, including Syria	711,683	539,143	1,146,670	955	159	569
Greece	1,012,961	1,100,588	969,255	324	363	.....
France	7,291	9,185	20,769	25,702	17,734	13,577
Italy	41,273	50,607	9,366	5,545	5,110	1,388
Other countries	40,267	15,481	3,461	11,972	15,905	14,252
Total	2,786,563	2,608,959	2,487,198	107,087	101,417	70,824

It will be seen that England sends quite a quantity of tobacco to Egypt. It comes not only from English Mediterranean possessions, but from Liverpool and London, and I am told that much of the tobacco thus imported into Egypt is really produced in the United States—surely, tobacco shipped from England eastward could be drawn largely from no other source. I have seen this "English tobacco" selling here in plugs manufactured in the United States; also, the American prepared smoking tobaccos. The English Mediterranean and French cigars sold in Egypt are, it is said, largely composed of American tobacco; but the main demand for foreign tobaccos is for the manufacture of cigarettes, which are not only largely consumed in Egypt, but are exported to all parts of the world. Egyptian tobacco has been consumed almost altogether by the common natives for smoking. It has been the cheapest tobacco in market, the Grecian coming next. The last-named is prepared in imitation of Turkish tobacco, and is packed in sacks like it. It is said some Turkish is mixed with it to give it the more popular flavor, yet its use is indignantly disclaimed by the makers of high-class cigarettes.

Turkish tobaccos, including Syrian, have a wide range in quality and prices. They are almost altogether light. Some of them, however, are dark, being made so by smoking in the curing process. The packing of all tobaccos sold here is in sacks, each package weighing from 125 to 175 pounds. Much of the tobacco is covered by an internal casing of cheap skins or by paper prepared for the purpose.

I have consulted with many tobacco merchants and cigarette manufacturers regarding the importation of American tobacco. The invariable answer is that they can make no promises as to its use unless supplied with reliable samples. I was shown some samples received a few days ago from the United States, and they were all pronounced too coarse and decidely too strong. I am satisfied the light mild leaves of North Carolina, and similar products of other States, could be prepared to meet the Egyptian demand. There was a tobacco known, if I remember aright, as "Virginia home-made twist," which would too, I think, come very near satisfying common demand. Stock out of which the best Durham smoking tobaccos are made would, I am satisfied, without the artificial perfume, suit the Egyptian taste.

I forward to the Department a number of specimens of tobaccos used in Egypt. Samples 1, 2, and 3 are Syrian. The long leaves, "Korani," are used for very superior cigarettes; and 1, 2, and 3 are also used for different grade cigarettes. The dark Turkish is a high grade and a favorite with many of Turkish tastes. The specimens of Grecian present larger leaves than the Turkish or Syrian. Out of it the common cigarettes are made, and now much of it will be used by the common people for smoking.

I have delayed making this report because a proposition to advance the duty on tobacco has been pending for some time, and I awaited its conclusion. A new decree has now been promulgated, and the import tax on all tobaccos, excepting Grecian, is 12½ piasters per oke, or 5¼ piasters per kilogram. Grecian tobacco pays an import tax of 14½ piasters per kilogram, and its present value, duty paid, is from 20 to 27 piasters. Egyptian tobacco is worth from 11 to 13 piasters, and Turkish and Syrian sells for from 25 to 65 piasters per kilogram.

Freight rates can be most reliably obtained from New York ship agencies. By sail, I presume, they would not exceed $5 per ton. I have known rags to be shipped from Alexandria to New York, cargo rates, at 15 shillings per ton.

The only standard exchange is sterling. Exchange on the United States is uncommon and very high.

The Egyptian pound (expressed "£ E. 1") is the eqivalent of $4.9641. One pound is composed of 100 piasters.—CAIRO, EGYPT, *June 12, 1888.*

JOHN CARDWELL,
U. S. Agent and Consul-General.

RESOURCES OF ACAPULCO.

In my annual report I stated that the cotton crop of last year was estimated at 16,000 bales, 160 pounds to the bale, which was not a full crop, but that the crop of this year would be, with a favorable season, larger, and reach, perhaps, 25,000 bales. I regret to state that this anticipation was not realized. Unfavorable weather and a visitation of caterpillars cut the crop short, and it is not larger than that of last year.

Cotton is worth here 13 cents a pound, Mexican money. About 5,000 bales of this crop has been sent to Mazatlan and other points on the coast; the remainder was sent on mules to manufactories in the interior. The expense attending this mode of transportation renders it an unprofitable crop even at best, while, if there is an abundant yield, there are so few manufactories in the state that it can not find a market.

COTTON MILLS.

There is a small cotton factory at Atoyac, 90 miles north of Acapulco, and two other factories, of 100 looms each, will soon be started. The machinery for these mills has not yet arrived. That they will prove paying

enterprises is evident, and, it is to be anticipated, they will lead to the establishment of other factories of greater extent. It is to be noted that the machinery for these mills, and, in fact, nearly all the machinery that reaches this coast, is brought from Europe. This is to be attributed, perhaps, to the fact that the men engaged in business here are all Europeans; and secondly, American manufacturers are not giving the trade of this section the attention its importance demands.

MINES.

Mining has not been prosecuted in this state to the extent that could reasonably have been anticipated. That gold and silver are to be found in paying quantities in the hills and mountains of Guerrero is universally conceded; but, strange to say, there has been no concerted effort to find these hidden treasures. The Guadaloupe silver mine is the most valuable mine that has yet been worked. In March last there were exported from it to Europe 90 tons of ore, the estimated value of which was £3,600. There are, no doubt, many valuable silver mines in the interior. All the outward evidences of rich deposits exist, not only of silver but of gold.

STEAM-SHIP LINES.

The Pacific Mail Steam-ship Company has the monopoly of the travel and carrying trade of this coast. The other lines in existence at the date of my last annual report have given way and left this company without a competitor. The Mexican International, it is true, has one steamer in the trade, but it has no schedule time for trips, and thus far has made but one voyage. The Pacific Mail (on the 30th of June) has changed back to its old schedule from tri-monthly to semi-monthly trips.

THE RAILROAD TO MEXICO.

Assurances are given here that the contemplated railroad from the City of Mexico to Acapulco has been undertaken by an English company, with ample means to complete it at an early day. Should this report prove true, Acapulco and this section will be brought into prominence. The harbor here is, beyond question, the most valuable on the Pacific Ocean. With a railroad outlet (connecting with the general railroad system of Mexico and the United States), Acapulco is destined to become, ultimately, an important maritime and commercial port. In this connection it is worthy of remark that the entire coast, from the Arizona line to the extreme limit of Mexico, presents a fruitful field for American enterprise; but no portion of it is more important than Acapulco, should the projected enterprises now in contemplation be carried out. Here are to be found the varied fruits and agricultural products of the tropics; a country rich in mines and valuable woods, inviting not only a more extended commerce, but settlement and intelligent enterprise. — ACAPULCO, MEXICO, *July 3, 1888.*

R. W. LOUGHERY,
Consul.

RAILWAYS IN CEYLON.

There are 182½ miles of railway in operation in Ceylon, and all are of 5-foot 6-inch gauge, viz: Colombo to Kandy, 74½ miles; Peradeniya to Nanuoya, 58½ miles; Colombo to Kalutara, 27¾ miles; Wharf and Breakwater branch, 4¼ miles; Peradeniya to Matale, 17½ miles; total, 182½ miles.

The line from Colombo to Kandy was opened for through traffic in 1867, and the Peradeniya and Nanuoya line in the following years, viz, to Gampola in 1873, to Nawalapitiya in 1874, to Talawakele in 1884, and to Nanuoya in 1885.

The line from Kandy to Matale was opened for traffic in 1880. All the railways except the Colombo to Kalutara and the Wharf and Breakwater lines (32 miles) penetrate the central province, which contains a moiety of the estates owned by European planters, whose interests they most directly subserve. They are owned and worked by the Government, and were built by capital borrowed in England, as also were all the other lines above enumerated. The cost of the up-country lines was 220,457 rupees per mile, which, considering that half of the money was expended when the currency was 10 rupees to the pound sterling and the remainder at 1*s.* 9*d.* per rupee, may be calculated at 45 cents per rupee; giving a total in United States money of $99,206 per mile. This includes every item of cost, from permanent way to work-shops, rolling stock, stations, etc. All are single lines, and the sleepers, mostly of Norway pine creosoted, are completely buried, so as to protect them from the sun and rain.

PRINCIPAL ENGINEERING FEATURES.

The formation width is 20 feet, though the rock cuttings are reduced to 18 feet; weight of rails, 72 pounds per yard; gauge, 5 feet 6 inches; sleepers, 9 feet 9 inches long and 10 x 5 inches square, and 3 feet apart, except on inclines, where two are added for every length of rail.

The length of the Kaduganawa incline, between Rambukana and Kandy, is 12 miles, and the gradient 1 in 45, with 10-chain curves. There are ten tunnels, the longest being 365 yards. The steepest gradients are between Nawalapitiya and Nanuoya, where, in some instances, they are 1 in 44, the sharpest curves being 5 chains. The highest altitude reached is 5,300 feet above sea level at Nanuoya, which place, measured on the map as the crow flies, is 36 miles from Rambukana—Rambukana being 53 miles from Colombo and 313 feet above sea level—and here the steep ascent practically begins; whereas the actual mileage traversed by the railway between Rambukana and Nanuoya is 78 miles, and the rise about 5,000 feet. These figures better represent the precipitous and tortuous character of the line than anything else I can write on the subject.

The branch line to Matale (17½ miles) has no marked feature except an iron-girder bridge, 664 feet long, on five piers, crossing the Mahawella River, the cost of which was $65,000. The stations are about 4½ miles apart; those on the main line from Colombo to Nanuoya averaging about 6 miles apart. This line taps a worn-out coffee district, the new industry of which may be tobacco. The lines from Colombo to Kandy, likewise Peradeniya to Nawalapitiya, and the sea-side lines, aggregating 123 miles, are now the unincumbered property of the colony, the total cost having been paid off in 1884. At the present time of writing, however, the other up-country lines (59 miles) can scarcely be said to be working at an appreciable profit, though the general manager of railways informs me that there is likely to be an improvement in this respect this year. The section from Peradeniya to Nawalapitiya (34 miles) may be yielding upwards of 3 per cent. on the invested capital; but the Matale line and the extension to Nanuoya are profitless, a circumstance owing, mostly, to the immense cost of their construction, the districts they penetrate affording no commensurate amount of traffic for so large an outlay.

SEA-SIDE LINE.

(Speed, 15 miles per hour, including stoppages.)

As hereinbefore intimated the line from Colombo to Kalutara (27¾ miles) is on the broad-gauge of 5 feet 6 inches, the stations being sixteen in number and averaging a little under 2 miles apart. It is devoted almost exclusively to passenger traffic, and is a stupendous structure for that purpose; nevertheless, it pays a steady profit of about 3 per cent. upon the invested capital, viz, 2,185,912 rupees, or 78,771 rupees per mile; say in United States money $984,660 and $35,446, respectively.

This line, running on an almost dead level, closely follows the sea-shore, and skirts a thickly-populated country abounding in cocoa-nuts and other fruits and arrack, and containing several prosperous towns and villages where much handicraft work, such as carpentering, coopering, gold and silver smithing, precious-stone cutting, etc., is done. Its ultimate destination is probably Point de Galle, or perhaps further on to Hambantota, at present an isolated place on the southeast coast, 75 miles from Galle and 147 from Colombo; but, nevertheless, if given transport facilities the natural outlet of the present popular district of Uva. As before stated, no goods except parcels are conveyed by this sea-side line; which, from its colossal character, both in permanent way and rolling stock, is fit to carry the commerce of a continent. The passenger fares amount to about 3 cents per mile for first class, 2 cents for second class, and 1 cent for third class, United States money.

The principal engineering features of this line are an iron bridge across the lagoon at Panadura, having a clear water-way of 600 feet, and another iron-girder bridge across the Kalugauga (Black River) at Kalutara, 12,000 feet long, divided into two equal sections by a small island in the river. This bridge cost $300,000.

FARES AND TRAFFIC ON UP-COUNTRY LINES.

Passenger fares from Colombo to Kandy (72 miles) amount to about 4 cents per mile for first class, 3 cents for second class, and 1½ cents for third class, United States money.

The Matale line fares are about the same, but those on the Peradeniya to Nanuoya extension are 5 cents per mile for first class, 3½ cents for second class, and 1½ cents for third class, United States money. This being a purely local and domestic matter, into which the element of exchange scarcely enters, I have converted the local currency into United States currency, at the rate of 45 cents per rupee; calculated on a gold basis the amount of the fares would bear a reduction of at least another 10 per cent.

GOODS TRAFFIC.

Goods are divided into three classes and charged accordingly. There are also special rates for certain products, viz, coffee, cinchona, tea, etc., mostly the products of plantations belonging to Europeans, and live stock, full particulars of which are given in Appendix I; also the total goods traffic, which amounts to about 200,000 tons per annum, including railway materials and stone for the Colombo breakwater.

The total of profits earned on all the railway lines at present in operation here is about 3 per cent. on the invested capital, which, it is to be feared, is not likely to be appreciably increased so long as the present expensive broad-gauge system is adhered to. Briefly stated, the broad-gauge railways of this country have, in my judgment, proved a positive incubus to the island; excepting, perhaps, the line to Kandy, beyond which place the system never ought to have been extended.

LINES PROJECTED AND SURVEYED.

At present there is no railway construction in progress, but the following lines have been surveyed, viz: Kandy to Badulla, 3-foot 6-inch gauge, 62½ miles, cost not estimated; Nanuoya to Haputale, 5-foot 6-inch gauge, 26 miles, $3,013,000; Mahara to Chilaw, 5-foot 6-inch gauge, 40 miles, $1,150,000; Mahara to Chilaw, 3-foot 3⅜-inch gauge, 40 miles, including mixed gauge to Colombo, $1,200,000; Kalutara to Bentota, 5-foot 6-inch gauge, 9 miles, no published particulars; Mahara to Jaffna, 183 miles, no published particulars; Mattakuliya to Colombo (tramway), 4⅛ miles, $271,000.

The first of the above named, called "Lower Badulla route," passes through a mostly barren, unhealthy, and somewhat precipitous line of country, sparsely populated, and offering few attractions to agriculturists—probably its construction is not seriously contemplated by the Government. Nevertheless, it is the most practicable route by which to tap Badulla, and thus connect the province of Uva by rail with Colombo, besides affording the

preliminary for a schème of narrow-gauge railways across the island to the fertile districts of Batticaloa and other important places on the eastern side of the island.

NANUOYA TO HAPUTALE — EXTENSION.

A line upon the Lartique or some other economical system could be built over the Lower Badulla route, aforesaid, for about one-fourth, proportionally, the estimated cost, viz, $3,013,000, of the projected broad-gauge extension of 26 miles to Haputale, which, after all, will only partially penetrate and only serve a fraction of the province of Uva, all of the plantations of which are not likely to produce annually in the near future, for railway transport, more than 7,000 tons of produce, principally coffee, cinchona, and tea; at least one-third, perhaps one-half, of which may never seek the line in question unless it is extended another 28 miles to Badulla. The up-traffic will probably not exceed 15,000 tons, which, together with a possible 7,000 tons down, gives a total of 22,000 tons, though a commission has estimated it at 27,444 tons sure, whereas even the 22,000 tons I estimate are somewhat problematical and largely dependent on future development.

As, however, this expensive extension has now been sanctioned by the Imperial Government and may very soon be in process of construction, I have simply to add that the district it will only partially penetrate contains altogether about 40,000 acres, nominally under tea, cinchona, and coffee cultivation, the last-named produce fast disappearing. The total inhabitants number about 170,000. Two hundred, perhaps, of these are Europeans, mostly planters, who overlook about 35,000 Tamil coolie laborers. Probably another 10,000 natives are engaged in trade, cart transport, and other miscellaneous occupations, leaving 125,000, mostly Singhalese, dependent upon native agriculture, the products of which are all consumed within the province. The climate is unexceptionable, but the arable land unextensive and even now almost fully occupied. That the wealth of the 125,000 people, of all ages, engaged in native agriculture will be increased or their condition be improved economically by this railway extension is more than doubtful, for, alas, past experience from such causes indicates, throughout the central provinces, to the contrary. As a matter of fact there is not an interior district of this island (bar Kandy) that has been tapped or even nearly approached by a railroad where, after ten years' experience, the natives were not greatly worse off than they were before, and I wish I could believe that the present project in question would result differently. If the intention was to continue the broad-gauge extension on to Passara as a final terminus of that system, from which cheaper and more practical lines should radiate across districts urgently requiring them, I could see some utility in the project; as it now appears, however, I see nothing in it but a mistake.

That new enterprises will be born of this extension, or old ones within the province be so stimulated as to lead to a materially increased consumption of, or demand for American manufactures, I do not believe; nevertheless, there might be such a change in native agricultural methods as would

create a demand for some of our farming implements. I annex, in Appendix II, a general summary of the estimated cost of the line in question, together with the alignment and list of gradients, the same being official. By these it will be noticed that the line will rise to 6,285 feet summit level, and descend to 4,761 feet at Haputale, the proposed terminus. These altitudes are given above railway datum, which is 70 feet higher than sea level. The heights above sea level are, therefore, 6,215 feet and 4,691 feet, respectively.

MAHARA TO CHILAW.

Mahara is a station on the line to Kandy, 9 miles from Colombo, and Chilaw is a town or hamlet situated on the west coast of the island, 48 miles from Colombo. The intervening country, containing about 170,000 inhabitants, is flat throughout, and for upwards of 30 miles from Colombo abounds in fine cinnamon and cocoa-nut plantations. North and east of Chilaw, in the neighborhood of Puttalam, there are fine forests of valuable timber, ebony, satin-wood, etc., and the land thereabouts is probably better than the average in Ceylon for agriculture. Cotton and tobacco cultivation are as likely to succeed there as anywhere else in the island, I should think, and a comparatively inexpensive line of light railway would prove a great boon and good investment by opening up the country, for it could be continued on to Puttalam, 42 miles further up the coast, and thence across the island, through Anuradhapura, or on to Jaffna, in the northern province, thereby effecting easy communication with that enterprising place, and affording transport for what is likely to prove, under the revival of the ancient irrigation system, the most fruitful district in Ceylon.

The line to Chilaw (40 miles), as at present surveyed, is conceived entirely in the interests of broad-gauge, and is estimate to cost 3,411,497 rupees, or 84,384 rupees per mile. There is also an estimate for a meter-gauge line, with a continuation of 9 miles, from Mahara to Colombo, amounting to 3,627,980 rupees, or 89,739 rupees per mile, which probably could be greatly modified. The goods traffic is estimated at 74,000 tons, which would probably be exceeded.

I give in Appendix III the official estimates of this line, both on the 5-foot 6-inch and meter gauges; also a summary of estimated goods traffic.

KALUTARA TO BENTOTA.

This will be a mere continuation for 9 miles of the sea-side line already described. It could probably be built for less than 50,000 rupees per mile, but is likely cost at least 70,000 rupees per mile.

MATALE TO JAFFNA

[183 miles]

would connect with the present broad-gauge line at Matale, and open up communication between Colombo and Jaffna, via Kandy and Anuradhapura, involving an ascent of 1,700 feet to Kandy, and a corresponding descent from Kandy to Colombo; whereas the Chilaw line, if constructed and con-

tinued on, as hereinbefore suggested, would run mostly upon a level, accommodate a much greater population, and serve a larger extent of virgin country.

COLOMBO CITY LINE [TRAMWAY].

The proposed tramway from Mattakkuliya to Colombo (4⅛ miles), estimated to cost 741,298 rupees, or $296,500, has remained unconsidered for years. A few days since, however, the Colombo municipal council resumed consideration of the subject, and I subjoin Appendix IV, a newspaper report of the proceedings.

CONCLUSION.

From all I can learn, from observation and the literary annals of railways, *in actu* and *in ambiguo* here, the present penchant for expensive broad-gauge lines stops the way to that future development which ought to cover the whole country with a net-work of iron rails, on the cheapest system that has been found to be serviceable elsewhere under similar conditions.

The country is rich in undeveloped and possible products, but financially poor. There probably is not the cash equivalent of $10,000,000 in the whole island. There is, however, notwithstanding admirable conduction, which must be admitted, as much pomp and circumstance with respect to railroading—so far as it has progressed—as would serve the richest community in the world, and the mass of the people groan under it.

The total cost of the 182½ miles in operation was, exclusive of interest, 35,924,738 rupees, or $16,166,132 in gold. It is in my opinion unreasonable for a people so poor in treasure to pay so much money for so little railroad, and the present railway debt, owed abroad, amounting to £1,253,000, or $6,266,000, at 4 per cent. interest, should not, I think, be increased by the further construction of any line at the cost at present prevailing.

To support this proposition, I would respectfully point out that the railway debt, aforesaid, bearing 4 per cent. interest, is for only 59 miles of railroad, which is not yielding any appreciable profit, a state of affairs, it is to be feared, very unlikely to be remedied by building another 26 miles, at a cost of $2,750,000, to carry, perhaps, 22,000 tons of goods traffic.

Doubtless the present Government would dislike—in giving to Uva the railway facilities its European denizens have long pined and agitated for—to put an attenuated tail, or less consequential line, upon the imposing structure its predecessors have carried so far in that direction, and time only will show whether or not such a sentiment, if it does exist, is justifiable economically.

APPENDIX I.— *Miscellaneous railway fares and rates between Colombo and principal stations.*

Colombo to—	Horse and carriage.				Goods, rates per ton.			Cattle rates.		Timber.	Special goods rates.
	One horse.	Two horses.	Three horses.	Carriages.	First class.	Second class.	Third class.	Half truck.	Full truck.	Per ton.	12½ and 25 cents per ton per mile.
	R. C.	R. C.	R. C.	R. C.	R. C.	R. C.	R. C.	R. C.	R. C.	R. C.	R. C.
Kalutara South	3 50	5 25	7 0	5 25	4 70	3 50	2 35	5 0	7 0	2 80	3 50
Panadure	.....	.....	.....	.....	3 0	2 25	1 50	5 0	5 0	1 80	2 25
Moratuwa	.....	.....	.....	.....	2 35	1 75	1 20	5 0	5 0	1 40	1 75
Wharf	.....	.....	.....	.....	0 75	0 50	0 50	.....	.....	0 50	0 50
Mahara	.....	.....	.....	.....	2 50	1 70	0 85	.....	.....	1 0	1 25
Henaratgoda	.....	.....	.....	.....	4 25	2 85	1 45	.....	.....	1 70	2 15
Veyangoda	3 0	4 50	6 0	4 50	5 75	3 85	1 95	5 0	5 75	2 30	2 90
Mirigama	4 0	6 0	8 0	6 0	7 75	5 20	2 60	5 20	7 75	3 10	3 90
Ambepussa	4 50	6 75	9 0	6 75	8 75	5 85	2 95	5 85	8 75	3 50	4 40
Polgahawela	5 75	8 75	11 50	8 75	11 50	7 70	3 85	7 70	11 50	4 60	5 75
Rambukkana	6 75	10 25	13 50	10 25	13 25	8 85	4 45	8 85	13 25	5 30	6 65
Radugannawa	8 25	12 50	16 50	12 50	16 25	10 85	5 45	10 85	16 25	6 50	8 15
Peradeniya	9 0	13 50	18 0	13 50	17 75	11 85	5 95	11 85	17 75	7 10	8 90
Kandy	9 50	14 25	19 0	14 25	18 75	12 50	6 25	12 50	18 75	7 50	9 40
Katugastota	.....	.....	.....	.....	19 50	13 0	6 50	13 0	19 50	7 80	9 75
Wattegama	10 50	15 75	21 0	15 75	20 50	13 70	6 85	13 70	20 50	8 20	10 25
Ukuwala	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Matale	11 75	17 75	23 50	17 75	23 0	15 35	7 70	15 35	23 0	9 20	11 50
Gampola	10 0	15 0	20 0	15 0	19 75	13 20	6 60	13 20	19 75	7 90	9 90
Navalapitiya	11 25	17 0	22 50	17 0	22 0	14 70	7 35	14 70	22 0	8 80	11 0
Galboda	13 0	19 50	26 0	19 50	22 50	17 50	9 10	17 50	25 50	10 30	12 75
Watawala	14 50	21 75	29 0	21 75	28 50	19 90	10 60	19 90	28 50	11 40	14 25
Hattou	16 50	24 75	33 0	24 75	32 50	23 10	12 60	23 10	32 50	13 0	16 25
Kotagala	17 50	26 0	34 50	26 0	34 0	24 30	13 35	24 30	34 0	13 60	17 0
Talawakele	18 50	27 75	37 0	27 75	36 50	26 30	14 60	26 30	36 50	14 60	18 25
Watagoda	19 50	29 25	39 0	29 25	38 50	27 90	15 60	27 90	38 50	15 40	19 25
Nanuoya	21 50	32 25	43 0	32 25	42 50	31 10	17 60	31 10	42 50	17 0	21 25

APPENDIX I. — Continued.

Coffee is charged at the following special rates per ton:

	R.	C.
From Nawalapitia to Colombo	12	25
" Gampola to Colombo	11	0
" Kandy to Colombo	10	0
" Peradeniya to Colombo	10	0
" Kadugannawa to Colombo	10	0
" Rambukkana to Colombo	7	25
" Polgahawella to Colombo	6	36
" Ambepusse to Colombo	5	50
" Katugastota to Colombo	10	50
" Wattegama to Colombo	11	25
" Matale to Colombo	12	50
" Kalutara to Colombo	3	50
" Panadure to Colombo	2	25

Cinchona is charged at the following special rates per ton:

	R.	C.
From Henaratgoda to Colombo	3	40
" Veyangoda to Colombo	4	60
" Ambepussa to Colombo	7	0
" Polgahawella to Colombo	9	20
" Rambukkana to Colombo	10	60
" Kadugannawa to Colombo	13	0
" Peradeniya to Colombo	14	20
" Kandy to Colombo	15	0
" Gampola to Colombo	15	80
" Nawalapitiya to Colombo	17	60
" Katugastota to Colombo	15	60
" Wattegama to Colombo	16	40
" Matale to Colombo	18	40
" Kalutara South to Colombo	5	60

Nanuoya line — Special rates for cinchona, coffee, and "class" goods per ton to Colombo.

Stations.	Cinchona.	Coffee.	First-class goods.	Second-class goods.	Third-class goods.
	R. C.	R. C.	R. C.	R. C.	R. C.
Galbodde	20 40	14 0	25 50	17 50	9 10
Watawala	22 80	15 50	28 50	9 90	10 60
Hattou	26 0	17 50	32 59	23 10	12 60
Kotagalea	27 20	18 25	34 0	24 30	13 35
Talawakele	29 20	19 50	36 50	26 30	14 60
Watagoda	30 80	20 50	38 50	27 90	15 60
Nanuoya	34 0	22 50	42 50	31 10	17 50

DEFINITION OF CLASSES.

CLASS I.— Furniture, piano, or other musical instruments, 50 per cent. added; wine or other liquors in bottle; groceries, oilmanstores, millinery, textile fabrics, glassware, crockery, meat, fish and game, tools.

CLASS II.— Rice, grain of all kinds in bags or packages or in bulk; oil, wine, or other liquid in cask; jute, horns, jaggery, sugar, cocoa-nuts, tobacco (unmanufactured), cinnamon, vegetable, and agricultural produce generally; refined salt and saltpetre, bales of cotton, cordage, machinery (not included in special rates), manufactured metals, coir-matting, castings, soap, hardware, and agricultural implements.

CLASS III.— Coke, coal, minerals, building materials, unworked metals, manure, and fire-wood.

Tonnage of goods carried by rail during 1883 and 1884.

Particulars.	1883.		1884.	
	Tons.	*Cwt.*	*Tons.*	*Cwt.*
First-class goods	2,782	8	3,106	0
Arrack	1,226	18	1,397	0
Cocoa-nut	2,672	1	2,106	17
Cocoa-nut oil	1,897	9	1,848	19
Coffee	19,866	11	16,928	1
Tea	794	7	1,132	16
Cinchona	3,420	17	5,137	4
Rice	51,302	16	48,428	4
Salt	3,270	8	3,103	17
Other second-class goods	30,700	3	31,477	8
Timber, wrought and unwrought	2,736	1	2,765	5
Plumbago	5,404	8	3,563	1
Manure	5,332	12	3,927	15
Other third-class goods	5,988	12	3,496	4
Railway material	11,031	5	16,222	5
Breakwater, etc., stone	89,225	3	42,819	1
Total	237,651	19	187,359	17

APPENDIX II.—*General summary of estimate, Nanuoya to Haputale.*

Sections.	Distance.	Way and works.	Stations.	Telegraph.	Total.
	Mls. Chs.	*Rupees.*	*Rupees.*	*Rupees.*	*Rupees.*
Section No. 1, Nanuoya to Ambawella	6 46.48	1,243,513	.....	4,444	1,247,957
Section No. 2, Nanuoya to Ambawella	2 31.00	539,465	33,000	1,313	573,778
Section No. 3, Ambawella to Haputale	16 41.72	4,039,774	137,500	9,086	4,186,360
Total	25 39.20	5,822,752	170,500	14,843	6,008,095
Per mile	.....	.....	.....	.....	235,704

Sections.	Land and compensation.	Supervision.	Rolling stock.	Total.	Grand total.
	Rupees.	*Rupees.*	*Rupees.*	*Rupees.*	*Rupees.*
Section No. 1, Nanuoya to Ambawella	28,875	65,162	145,614	239,651	1,487,608
Section No. 2, Nanuoya to Ambawella	Nominal.	22,000	53,695	75,695	649,473
Section No. 3, Ambawella to Haputale	33,000	154,000	378,235	565,235	4,751,595
Total	61,875	241,162	577,544	880,581	6,888,676
Per mile	.....	.....	.....	34,546	270,250

ALIGNMENT.

Sections.	Curves.	Straights.	Percentage of curves.	Percentage of straights.
	Mls. Chs.	*Mls. Chs.*		
Section No. 1, Nanuoya to Ambawella	3 75.52	2 50.96	66.80	33.20
Section No. 2, Nanuoya to Ambawella	1 34.25	0 76.75	59.80	40.20
Section No. 3, Ambawella to Haputale	10 13.28	6 28.44	61.53	38.47
Total	15 43.05	9 76.15		

Nanuoya to Ambawella, section No. 2—list of gradients.

From—	Height above datum.	To—	Height above datum.	Length.	Gradient.	Remarks.
		Mls. Chs.		*Chains.*		
Stake 77	6,007.00	0 2.00	6,007.00	5.00	Level.....	
Mls. Chs.						
0 2.00	6,007.00	0 25.00	6,030.00	23.00	1 in 66	Rising.
0 25.00	6,030.00	0 27.00	6,030.00	2.00	Level.....	
0 27.00	6,030.00	0 40.00	6,017.00	13.00	1 in 66	Falling.
0 40.00	6,017.00	0 64.00	6,017.00	24.00	Level.....	
0 64.00	6,017.00	1 17.00	6,056.60	33.00	1 in 55	Rising.
1 17.00	6,056.60	1 20.00	6,056.60	3.00	Level.....	
1 20.00	6,056.60	1 50.50	6,020.00	30.50	1 in 55	Falling.
1 50.50	6,020.00	1 55.00	6,020.00	4.50	Level.....	
1 55.00	6,020.00	2 12.00	6,060.70	37.00	1 in 60	Rising.
2 12.00	6,060.70	2 28.00	6,060.70	16.00	Level.....	Ambawella station ground.

Ambawella to Haputale district—list of gradients.

From—	Height above datum.	To—	Height above datum.	Length.	Gradient.	Remarks.
Section No. 1, Ambawella to Demodara:						
Mls. Chs.		*Mls. Chs.*		*Chains.*		
2 28.00	6,060.70	2 28.76	6,060.70	0.76	Level	
2 28.76	6,060.70	4 26.00	6,265.10	157.24	1 in 50.77	Rising.
4 26.00	6,265.10	4 40.10	6,265.10	14.10	Level	
4 40.10	6,265.10	4 60.00	6,285.00	19.90	1 in 66	Rising.
4 60.00	6,285.00	5 7.00	6,285.00	27.00	Level	Patupola station.
5 7.00	6,285.00	5 23.00	6,265.00	16.00	1 in 52.8	Falling.
5 23.00	6,265.00	5 39.00	6,257.00	16.00	1 in 132	Do.
5 39.00	6,257.00					
Section No. 2, Demodara to Idulgashena:						
Mls. Chs.						
0 0.00		5 32.00	5,883.93	248.72	1 in 44	Falling.
5 32.00	5,883.93	5 16.66	5,883.93	15.34	Level	
5 16.66	5,883.93		5,258.95	416.66	1 in 44	Falling.
Section No. 3, Idulgashena to Haputale:						
Mls. Chs.						
0 0.00	5,258.95	0 15.00	5,258.95	15.00	Level	Idulgashena station.
0 15.00	5,258.95	0 30.00	5,236.45	15.00	1 in 44	Falling.
0 30.00	5,236.45	0 49.00	5,212.70	19.00	1 in 52.8	Do.
0 49.00	5,212.70	4 30.00	4,761.20	301.00	1 in 44	Do.
4 30.00	4,761.20	4 70.00	4,761.20	40.00	Level	Haputale station.

APPENDIX III.

BROAD-GAUGE LINE.

The following is a summary of the estimate for a line on 5-foot 6-inch gauge from Mahala to Chilaw, a distance of 40 miles and 34.24 chains, or 40.428 miles:

Way and works.

	Rupees.	Cts.
Earth-work	129,459	60
Bridges	555,862	0
Culverts	39,432	0
Permanent way	1,122,629	77
Fencing	23,000	0
Level crossings	46,700	0
Metaling roads	14,014	0
Total	1,931,097	37
Add for contingencies	193,109	73
Total for way and works	2,124,207	10
Or, per mile	52,542	96

Land, stations, rolling stock, etc.

Land and compensation for house property	118,500	0
Stations	349,150	0
Telegraph, at 500 rupees per mile	20,214	0

	Rupees. Cts.
Engineering supervision	100,000 0
Rolling stock	512,400 0
Accommodations at Colombo station	70,000 0
Total	1,170,264 0
Add for contingencies	117,026 40
Total	1,287,290 40
Or, per mile	31,841 55

Recapitulation.

Estimate for way and works	2,124,207 10
Estimate for land, stations, etc	1,287,290 40
Grand total	3,411,497 50
Or, per mile	84,384 52

Summary of goods traffic.

	Tons.
Rice (calculating 2 bushels per 100 pounds)	12,500
Copperah and cocoa-nuts	50,000
Salt	9,000
Food stuffs, cloth, etc	1,500
Timber	500
Fish	300
Vegetables, plantain, pumpkins, manioca, etc	200
Total	74,000

METER-GAUGE LINE.

	Rupees. Cts.
Earth-work	118,955 60
Bridges	547,708 0
Culverts	35,858 0
Permanent way	993,664 45
Fencing	23,000 0
Level crossings	46,700 0
Metaling roads	14,014 0
Total	1,779,900 5
Add for contingencies	177,990 0
Total for way and works	1,957,890 5
Or, per mile	48,429 6

Land, stations, rolling stock, etc.

Land and compensation for house property	109,500 0
Stations	349,150 0
Telegraph, at 500 rupees per mile	20,214 0
Engineering supervision	100,000 0
Rolling stock	741,400 0
Laying third rail to Colombo and in Colombo station yard	112,000 0
Works at Colombo station	86,000 0
Total	1,518,264 0
Add for contingencies	151,826 40
Total	1,670,090 40
Or, per mile	41,310 24

Recapitulation.

	Rupees.	Cts.
Estimate for way and works	1,957,890	5
Estimate for land, stations, etc	1,670,090	40
Grand total	3,627,980	45
Or, per mile	89,739	30

ESTIMATE FOR A METER-GAUGE LINE WITH BREAK OF GAUGE AT MAHARA.

Way and works as before	1,957,890	5
Or, per mile	48,429	6

Land, stations, rolling stock, etc.

Land and compensation for house property	109,500	0
Stations	349,150	0
Telegraph, at 500 rupees per mile	20,214	0
Engineering supervision	100,000	0
Rolling stock	741,400	0
Works at Mahara station	259,500	0
Total	1,579,764	0
Or, per mile	39,075	98

Recapitulation.

Estimate for way and works	1,957,890	5
Estimate for land, rolling stock, etc	1,579,764	0
Grand total	3,537,654	5
Or, per mile	87,505	4

APPENDIX IV.

The proposed tramway for Colombo.

Resolved, That the council be recommended to repeat the request made to the Government in letter No. 79, of November 6, 1886, for permission to enter into an agreement with Messrs. Freudenberg & Co., upon the basis of the concessions already approved by both parties.

Read, in connection with the tramway scheme, a letter dated April 28, 1888, from Messrs. Freudenberg & Co., requesting to be allowed the choice of as many motive powers as possible, and intimating that, while they are prepared to accept the concessions with electricity and cables only as motive powers, the formation of a company would, in that case, be very much more difficult than otherwise, if not indeed impossible.

Mr. MacBride moved that, in view of the concluding paragraph of Messrs. Freudenberg & Cos'. letter of April 28, and of the great improvement which has taken place in the construction and working of street tramways, the concessions adopted by the municipal council on October 12, 1886, on the recommendation of the public works committee, be, after they have received the assent of the Government, advertised locally and in England, with a view to inviting tenders for the construction and working of tramways within this municipality. Mr. Walker seconded. Carried.

Resolved, That a copy of the above resolution be forwarded to Messrs. Freudenberg & Co.

The council adjourned to Tuesday, May 1, 1888, at 3 p. m.

COLOMBO, *May 18, 1888.* W. MOREY,
Consul.

NOTE.—Most of the statistics contained in this report were courteously furnished by the local government, though some others that were desired could not be given. Some were taken from the "Ceylon hand books" (Ferguson's) and the advertising agency; some from the local Times, a newspaper, and others were obtained from the general manager of Ceylon Government railways, and some from the Ceylon Government printer, all reliable sources, to whom and to which I am greatly indebted for the information they have afforded.

PROPOSED NEW PORTUGUESE TARIFF.

[Transmitted by Mr. Wilbur.—Translation.]

The treaty of commerce and navigation celebrated with France terminating in 1892, it becomes necessary to gather the elements for the organization of a new project for a general custom-house tariff, that may hereafter serve as a basis for such negotiations as may be established with foreign nations: His Majesty the King sees fit to direct the superior council of the custom-house to make the necessary examination and studies to organize the said project of tariff. For this purpose the same council will apply to all corporations and authorities who may possibly be able to throw light on the subject.

MARIANNO DE CARVALHO.

PALACE, *July 28, 1888.*

INGRAIN CARPET INDUSTRY.

COST OF MANUFACTURING TWO-PLY 4-4 INGRAIN CARPET, SUPERIOR QUALITY, IN AMERICA AND IN ENGLAND.

The American cost.

The mill from which the account is taken runs 75 power looms, with an annual product of 675,000 yards, an average of 30 yards per loom per day. The price paid for weaving is 5¼ cents a yard. At 180 yards a week this brings up the average earnings to $9.45. The additional labor is covered by the following items:

6 loom fixers, at $16 per week	$96	1 engineer	$15
1 loom boss	23	2 cop boys, at $3.50	7
12 winders, at $6	72	2 twist winders, at $3	6
6 spoolers, at $6	36	1 card-cutter	9
3 warpers, at $12	36	1 designer	25
1 shearer	12		
2 twisters, at $5.50	11	Total	348

Total for the year, of fifty weeks, $17,400. Each yard costs, therefore, in additional labor expense, 2.57 cents, and in total labor, 7.82 cents. In most mills of this size, I am told, the designing and card-cutting are done outside by the piece much cheaper than the above. On the other hand the cost of burling is not included. The total of additional labor put at $18,000 would cover all and everything and bring up the total labor cost to 7.92 cents per yard.

On the Knowles & Crompton looms, now rapidly coming into use in place of the Murkland looms, the product is 40 yards and above a day, and the weaving wages are reduced to 4 and 4½ cents a yard. In the eastern carpet mills the work is done at these rates. This reduction, it is stated, will

pay for the loom in three years. These new looms cost about one-half the price of the old style.

The material used enters into the mill account as finished yarn. The labor-cost in the spinning—demonstrated so frequently before in my reports to be as cheap, and in many instances cheaper in America than in England—need not be gone over again in the coarser yarns used in ingrain carpets, which certainly can be made as cheaply as in England. It can safely be taken on the basis of the English spinning cost. Not so, however, in the wools. They show as decided a difference in the cost as in the finer goods described in previous reports. If it is difficult to follow the ingredients of a warp and a weft thread in a fine "all-wool" fabric for clothing purposes it is still more so in the yarns used for ingrain carpets, and while not much cheapening perhaps could be effected in labor, a great margin is usually found in the mixing of the material. Shoddy, cows' hair, and wool all peaceably lie down together in the same yarn thread, while neighboring threads contain the pure article as cut from the real unadulterated sheep.

For a piece of 120 yards the following quantities of yarns, at the respective prices, dyed and ready for use, are required:

39 pounds of worsted warp, at 50 cents	$19.50
33 pounds of black for filling, at 18 cents	5.94
26 pounds of single white, at 24 cents	6.24
26 pounds of double-reel white, at 27 cents	7.02
26 pounds of mousque, at 30 cents	7.80
Total per piece	46.50

and per yard, 38.75 cents; labor-cost, 7.92; total cost, 46.67 cents.

OTHER EXPENSES.

The additional expenses are:

Interest on capital ($100,000 at 6 per cent.)	$6,000
Wear and tear of machinery ($65,000 at 5 per cent.)	3,250
Cost of coal, 2 tons per day, at $4 (600 tons)	2,400
Insurance, 2 per cent. on $100,000	2,000
Taxes, $1.85 on $50,000	925
Office expenses, clerk hire, etc	2,000
Selling expense, 2 cents per yard	13,500
Total	30,075

equal to 4.4 cents, which, with the material and labor-cost, 46.67 cents, brings up the total cost to 51.07 cents net. So that the total labor and selling and manufacturing expenses would stand as 12.32 cents.

The selling price of a somewhat lower quality was stated to me by another manufacturer, whose weaving price to the weaver is the same as the one in this account, *i. e.*, 5¼ cents, as 47½ cents net, which clearly demonstrated that the cheapening in this case would have to be effected, as intimated above, from the materials.

The English Cost.

The manufacture of ingrain carpets in England is largely constructed on hand looms yet, and very likely will be continued so for some time to come. The reasons are obvious. The cost of production is nearly the same, and hand-loom weaving offers to the manufacturer the great advantage that he need not sink the greater part of his capital into fixed charges of costly machinery.

My first visit was to a manufacturer who employs about 120 looms, all of which are hand looms belonging to the weavers. The cost of his yarns is 10 pence a pound, or 20 cents all round, dyeing included; a pound and a quarter to the yard, 12½ pence or 25 cents. The cost of manufacturing, including wages and expense, delivered free on board, is 7½ pence or 15 cents. A sum total of net cost of 40 cents. The weaver gets his yarn and delivers the finished carpet, all ready for shipment, without any further charge to the manufacturer. That is to say he does the warping, weaving, and all of what is contained in incidental labor in power weaving, and for the completed delivered work he gets 5 pence, or 10 cents a yard. The remaining 5 cents cover what, in our estimate, is contained in incidentals and a small profit charge. He has no loom fixers, winders, spoolers, warpers, etc, to pay, no engineer, no coal for power, etc. The interest on capital is not heavy, as no great capital is required. The wear and tear percentage is entirely absent, and he can conduct his business free of all risks, frequently the outcome of the ownership of a large plant which has to be provided with work in order to save decay and decline resulting from material and pecuniary shrinkage of idle machinery. The cost of a hand loom is £13, or $63, while a power loom, such as used in England, costs £120, or $580. A good hand-loom weaver would turn out about 120 yards of this quality in a fortnight, with earnings of $6 a week. Another manufacturer whom I visited employs both hand and power looms. His firm was pointed out to me by others as the largest makers of ingrain carpets by power. But he also stated to me that most all the ingrain-carpet weaving was done on hand looms yet, and that the largest makers were still making them in this manner. They commenced in 1868 as single workingmen weavers, he and his brother, and had gradually worked up. In 1874 they first began power-loom weaving. They were ridiculed by their fellow manufacturers, who all predicted disaster. Many had tried it before and had failed. Still they persisted and succeeded. In England they use the Murkland loom, the loom in use in America, where they are making room now for the newer and improved ones, Knowles & Crompton's, alluded to before. All of these are American inventions, as power weaving in ingrains has taken its rise there. Indeed, all the first power machines used in England were of American make. They were, however, soon superseded by English makers, as the American were found too poor—castings being used where hammered iron and steel are employed in the English loom, as my informant stated. That power weaving has not taken deeper root in

England is due to causes partly stated above, and also to the fact that to make power-loom weaving profitable would require a large output with infrequent changes.

"The output is not large enough per loom to warrant the introduction of costly machinery. If a girl"—these are the words of my informant—"earns 12*s.* a week she is satisfied and can not be brought to work up higher than 15*s.* If she gets above that in times of great pressure, when some work up to £1 and even £1 4*s.*, they soon fall back again. If we discharge them and take new ones it would be the same again in a very short time. They lack the ambition to rise above their station. Their present earnings suffice them to maintain that and the mode of living they are used to. Those who go to America go there to make their fortune, and then, of course, they work with a different spirit, as they are there freed from home influences and take up the spirit of their surroundings."

I have expressed this view frequently in reports and otherwise. Its correctness has been questioned in some quarters. It will therefore be of value to have the corroborative opinion of an English manufacturer whose experience and intelligence make him well qualified to judge the subject of comparative productiveness of labor from the English standpoint. He says further "that the English go along in the same way as their fathers. They want no changes. It is the same in Sheffield and other places." This firm (and many others do the same) is selling its own goods direct to the retail trade. One brother is almost always traveling in England and Scotland, while the other remains at home attending to the business and the factory.

The wages paid for power-loom weaving are 2*d.* farthing, or 4½ cents per yard of this quality. They employ, besides the hand looms, 26 power looms, with an average in a busy week of 3,000 yards. They employ besides the weavers—

1 loom boss, at 45*s.*	$10.80
2 loom fixers, at 30*s.*, or $7.20	14.40
5 spool winders, at 12*s.*, or $2.88	14.40
2 winders, at 12*s.*, or $2.88	5.66
2 warpers, at 12*s.*, or $2.88	5.66
1 shearer, at 16*s.*	3.84
1 twister, at 9*s.*	2.16
1 engineer, at 30*s*	7.20
1 cop boy, at 12*s.*	2.88
1 card-cutter, at 12*s*	2.88
1 designer, at £5	24.00
Total	93.88

Burling is paid by the piece of 60 yards at 1*s.* 7*d.*, or 38 cents per piece, equal to .636 cents per yard; $93.88 of general labor divided on 3,000 yards is 3.129 cents, and with burling, 3.765 cents against 2.67 cents in America. This is, however, for a larger weekly output than ordinary, and for a week where a lower output would be realized a corresponding higher additional general labor-cost would be the result.

For wear and tear they allow 10 per cent., and in very good years write off as high as 15 per cent. The selling expenses, as they have a good deal

of traveling to do, are also higher than in the American cost statement, and amount to from 5 to 6 per cent. of the value of the goods.

The selling price is *2s. 2d.*, or 52 cents a yard. As the wool is considerably lower than the American, the English manufacturer, though his cost is higher, on the contrary has a much greater margin of profit left than the American, according to the following statement.

The cost of the yarns used in goods of this quality is *1s. 2⅜d.* per yard, or 28¾ cents.

The respective cost stands, therefore, as follows in power-loom manufacturing:

Items of cost.	America.			England.		
	Labor.	Expenses.	Total.	Labor.	Expenses.	Total.
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
Yarn			38.75			28.75
Weaving	4 to 5.25			4.50		
General labor	2.67		7.92	3.765		8.265
General expenses		2.4			5	
Selling expense		2	4.4		2.5	7.5
Total	7.92	4.4	51.07	8.265	7.5	44.515

Difference in cost of production in America, including—

	Cents.
Selling expenses	— 3.445
Material	+ 6.555
Raw materials	+10

This statement of the English cost of power weaving brings out clearly what had been said by my first informant that the general cost of manufacture is about the same in both processes, and explains satisfactorily in figures what have been before given as reasons why the hand loom keeps the field successfully against the power loom. I have taken the highest American weaving wages paid, not taking into account that with the improved looms weaving is done at from ¾ to 1¼ cents less per yard. Still, with all this, the general cost is much less than in England, and with wool at the English cost a yard of carpet could be produced in America for 41.07 cents which costs 44.515 cents in England. At the present depressed state of prices in carpets in America a very insignificant margin of profit is left to the carpet manufacturer, while the English manufacturer has a margin of 7.485 cents left. —TUNSTALL, ENGLAND, *July 9, 1888.*

J. SCHOENHOF,
Consul.

THE INCREASE IN SWEDISH DUTIES.

In the Rihsdag just closed protectionism has been the reigning element On nearly everything duties have been put. In a previous dispatch (No. 181, of March 5) I have reported the duties put upon grain, which already are law. I will now state some of the other duties which will, it is said, at least partially become law on July 1st.

SEEDS.

Seeds of timothy, 5 öre per kilogram.

Seeds of fir, spruce, pine, and other kinds of trees, 50 öre per kilogram (before free).

PROVISIONS.

Potatoes, 50 öre per 100 kilograms (before free).

Bread, finer kinds, 30 öre per kilogram (before 18 öre); other kinds, 4.3 öre per kilogram (before free).

Butter and margarine, 20 öre per kilogram (before free).

Meat of birds, 20 öre; other kinds, 7 öre per kilogram (before free).

Pork, smoked, 25 öre; other kinds, 20 öre per kilogram (before free).

Sausage, 50 öre per kilogram (before 25 öre).

Lard, 20 öre per kilogram (before free).

Rice or paddy, not pared, 2 crowns 50 öre per 100 kilograms.

Grit of rice, 4 crowns 50 öre per 100 kilograms; other kinds (except grit of grains), 17 öre per kilogram (before free).

Macaroni, vermicelli, 17 öre per kilogram (before free).

Plums, dry, 50 öre per kilogram (before 20 öre).

Chestnuts, 25 öre per kilogram (before 15 öre).

Caviare, 2 crowns 50 öre per kilogram (before 1.80 crown).

Oysters, 10 öre per kilogram (before 5 öre).

ANIMALS.

Horses, 50 crowns per animal (before free).

Cattle, 10 crowns per animal (before free).

Sheep, 1 crown per animal (before free).

Pigs, 15 öre per kilogram (before free).

IRON AND METALS.

Pig-iron and scrap, 80 öre per 100 kilograms (before free).

Blooms of iron and steel, 2 crowns per 100 kilograms (before free).

Beams and other form of iron of lower weight per meter than 20 kilograms, 2.50 crowns per 100 kilograms (before free).

Bar-iron, 2.50 crowns per 100 kilograms (before free).

Sheet-iron, not polished, 3 millimeters thick and more, 3 crowns; less thickness, 4 crowns; polished, varnished, and nickled, 6 crowns (before free).

Anchors, drags, etc., 4 crowns per 100 kilograms (before free).

Chains with 6.25 millimeters diameter of the links, 7 crowns per 100 kilograms; 25 millimeters or more, 3.50 crowns per 100 kilograms (before free).

Nails, large, 4 öre per kilogram (before 3 öre).

Screws, for wood, 75 millimeters long and more, 20 öre; less than 75 millimeters, 30 öre (before 15 öre).

Castings: Beams, columns, fences, etc., 2 öre per kilogram (before 1 öre); stoves, cooking vessels, 4 öre per kilogram (before 2 öre); tables, chairs, smoothing-irons, etc., 10 öre per kilogram (before 8 öre); copying presses, mincing machines, etc., 20 öre per kilogram (before 15 öre); finer castings, 40 öre per kilogram (before 25 öre).

Railway material: Axles, springs, wheels, wheel-bands, 5 öre per kilogram; not specified, 10 per cent. of the value.

Iron and steel wires, thick, 4 ore; fine, 8 ore per kilogram (before free).

Copper and other wire, 10 ore per kilogram (before free).

Metal wire (before free), duty as on other wire.

Printing types, letter stamps, 25 ore per kilogram (before free).

Guns and rifles, 1 crown 50 ore per kilogram (before 50 ore).

Fire-engines, syringes, 10 per cent. ad valorem (before 5 per cent.).

Lead, worked, not specified, unpolished and unvarnished, 10 ore per kilogram (before 7 ore).

Shot, 10 ore per kilogram (before 7 ore).

OTHER DUTIES.

Vessels and boats of iron and steam-boats of wood, 10 per cent. ad valorem (before free).

Instruments: Pianos, 150 crowns per piece (before 60 crowns); grand pianos, 200 crowns per piece (before 100 crowns); hand organs, 10 crowns per piece (before 1 crown); music boxes, 3 crowns per kilogram (before 2 crowns); accordions, 1 crown per kilogram (before 50 ore).

Yarn: Many-threaded cotton thread, not colored, 20 ore (before 15 ore); colored or printed, 35 ore per kilogram (before 30); twisted linen and hemp thread, not colored, 40 ore (before 20 ore); colored, 60 ore per kilogram (before 40 ore); jute thread, not colored and unbleached, 6 ore (before free); colored, bleached, or printed, 18 ore per kilogram (before 10); sail and binding yarn, sized, colored, etc., 40 ore per kilogram (before 20).

Cloth: Embroidered works, 20 per cent. ad valorem, when the cloth is duty free (before 10 per cent.); jute cloth, unbleached and not colored, 10 ore per kilogram (before free); woven felt of cattle, 25 ore per kilogram (before free); sacks, the cloth of which they are made and 10 per cent. ad valorem (before, the cloth of which made).

Book-binder's works: Albums, 2 crowns per kilogram (before 1 crown); bindings, 1 crown per kilogram (before 60 ore); books in bindings of paper and cloth, without gold, 50 ore; in other bindings, 2 crowns per kilogram (before 25 ore); maps with Swedish print, not bound, 1 crown 50 ore; maps with Swedish print, bound, 2 crowns per kilogram (before free).

Chemico-technical preparations: Albumen, 1 crown 50 ore per 100 kilograms (before free); sulphated clay, 1 crown per 100 kilograms (before 5 per cent. ad valorem); shoe blacking, 15 ore per kilogram (before 5 ore); ink, 10 ore per kilogram (before 6 ore); cement, 40 ore per 100 kilograms (before free); color boxes, 1 crown 50 ore per kilogram (before 80 ore); gypsum, burnt and ground, 40 ore (before free); plaster of Paris works, 20 ore per kilogram (before (10); glass bottles of light green or half-white color, not polished, 6 ore per kilogram (before 2 ore); chemical glass, 10 ore per kilogram (before free); patent glass, etc., 7 ore per kilogram (before free); glass powder, 2 ore per kilogram (before free); yeast, 20 ore per kilogram (before free); chalk, white, ground or separated by washing, 1 crown per 100 kilograms (before free); glue, 20 ore per kilogram (before 10 ore); smelling water, 2 crowns per kilogram (before 1 crown); oils, vegetable, volatile, 2 crowns per kilogram (before 1 crown); starch, 17 ore per kilogram (before 10 ore); fire-proof bricks, thick, for floors and walls, 20 ore per 100 kilograms (before free)—thinner floor and wall plates, glazed, will be treated as faience, with 10 to 16 ore per kilogram (before 3 ore); sulphuric acid, 0.5 ore per kilogram (before free); wax, 15 ore per kilogram (before free).

Brushmaker's works, set in unpolished or painted wood or iron, 12 ore per kilogram (before 10 ore); painter's or mason's brushes, 12 ore per kilogram (before free).

Basket-maker's works, "other kinds" (than of twigs not paled and coarse shavings), 1 crown per kilogram (before 60 ore).

Playthings, 2 crowns per kilogram (before 1 crown 50 ore).

Work in wood, 15 per cent. ad valorem (before 10 per cent.).

Wooden wares: Pine and fir, without polishing, 5 ore (before 2 ore); pine and fir, with polishing, 10 ore (before 4 ore); elm, ash, and native woods, 30 ore (before 8 ore); pear, mahogany, and other foreign woods, 60 ore per kilogram (before 15 ore).

Pitch, 2 crowns per 100 kilograms (before free).

Boots, with wooden bottoms, 94 ore per kilogram (before free).

Lasts, 10 ore per kilogram (before free).

Cordage, 10 ore per kilogram (before free).

Masks, 50 ore per piece (before 25 ore).

Fancy goods, 2 crowns per kilogram before 80 ore).

Fans, 5 crowns per kilogram (before 1.20 crowns).
Paste-board, 1 ore per kilogram (before free).
Juice of fruit and berries, 30 ore per liter (before 15 ore).
Cigars and cigarettes, 4 crowns per kilogram (before 3 crowns).
Flowers, 2 crowns per kilogram (before 30 ore).
Plants, 30 ore per kilogram (before free).
Turfy soil, 30 ore per 100 kilograms (before free).
Furniture and movable goods, old and used, 15 per cent. ad valorem.

On the other side, the duty has been decreased on coffee from 26 öre to 12 öre per kilogram, and on tea from 80 to 50 öre per kilogram.

The following goods have been declared free of duty:

Aniline colors, which before had a duty of 5 per cent. ad valorem.
Indigo, extract of indigo, indigo carmine, and cochineal (before 20 ore per kilogram).
Fat, not volatile oils, in wood (before 2 ore per kilogram).
Lighting oils (before 2 ore per kilogram).
Eyes of enamel.

The quantity used for calculating the tariff is the kilogram and liter. The par value of a crown is 26.8 cents, and a crown has 100 öre.—STOCKHOLM, SWEDEN, *June 28, 1888.*

NERE A. ELFWING,
Consul.

THE ITALIAN SILK TRADE IN 1887–'88.

The silk "campaign" of 1887–'88, which reaches its close with the month of June, has proved an unfortunate and unprofitable one for the Italian silk industry. The harvest of 1887, which gave promise of being unusually abundant, commenced with low prices for cocoons. In the midst of the harvest a report was raised and assiduously circulated that the yield had been greatly overestimated, and was in reality much inferior to that of the preceding year. The easily deluded and frightened reelers began eagerly to provide themselves, and a sharp advance took place in the price of cocoons, which, commencing in southern Italy at 3.25 francs per kilogram, were selling at the close in Piedmont for 4.50 francs. As a matter of fact, the harvest was a good one, and very satisfactory in the quality of the cocoons, especially of the native yellows, as the following table shows:

Race.	Quantity.	Weight of cocoons, yielding 1 kilogram of silk.	Amount of silk produced.
	Kilograms.	*Kilograms.*	*Kilograms.*
Original Japan greens	2,600,000	13.50	192,592
Reproduced Japan greens	10,260,000	13.50	760,000
Native yellows	26,140,000	11.00	2,376,363
Total	39,000,000	*12.66	3,328,955

*Average.

A comparison with previous years shows that the harvest of 1887 was in this respect exceptionally good:

Year.	Quantity of cocoons.	Weight of cocoons employed per kilogram of silk.	Yield in silk.
	Kilograms.	*Kilograms.*	
1879	18,526,446	13.94	1,329,013
1880	41,573,189	14.60	2,847,478
1881	39,364,091	12.96	3,052,784
1882	21,869,076	12.33	2,584,677
1883	41,625,299	12.58	3,308,847
1884	36,464,663	12.71	2,868,974
1885	32,266,017	11.82	2,729,781
1886	41,397,323	12.12	3,413,299
1887	39,000,000	11.72	3,328,955

The yield per ounce of seed incubated was likewise good, and indicative of the advance in sericulture made in Italy. In 1887 the result was:

Race.	Seed incubated.	Product in cocoons.		Price per kilogram.	Total value.
		Total.	Per ounce.		
	Ounces.	*Kilograms.*	*Kilograms.*	*Francs.*	*Francs.*
Original Japan greens	100,000	2,600,000	26	3.40	8,840,000
Reproduced Japan greens	380,000	10,260,000	27	3.40	34,884,000
Native yellows	770,000	26,140,000	33	4.00	104,560,000
Total	1,250,000	39,000,000	*31.20	*3.80	148,284,000

*Average.

In comparison with previous years, the yield per ounce of seed incubated was as follows:

Year.	Seed incubated.	Product in cocoons.		Price per kilogram.	Total value.
		Total.	Per ounce.		
	Ounces.	*Kilograms.*	*Kilograms.*	*Francs.*	*Francs.*
1879	1,600,000	18,526,446	11.57	5.70	105,600,742
1880	1,719,390	41,674,109	24.24	4.00	166,696,436
1881	1,592,910	39,837,661	21.01	3.90	155,366,878
1882	1,336,452	31,628,112	23.66	4.43	140,330,338
1883	1,456,137	42,211,039	29.00	3.63	153,243,236
1884	1,424,595	36,816,965	25.84	3.808	140,204,385
1885	1,233,036	32,266,017	26.17	3.12	100,803,233
1886	1,246,614	41,397,323	33.21	3.69	152,936,157
1887	1,250,000	39,000,000	31.20	3.80	148,284,000

The campaign opened auspiciously, and in July raws had obtained an advance of 2 francs per kilogram. August was a period of exceptional activity. It was an open secret that the syndicate, whose operations in 1885

had been so remarkably successful, was again at work; stocks were low, and everything pointed to increased activity in silk manufacturing. The fear of a still further rise led manufacturers to provide themselves in anticipation, and the increased demand brought about a still further rise of 2 francs. During the first half of September the same tendency prevailed, and the market continued strong. The second half of the month was marked by an increased resistance on the part of the buyers, and business became dull. October developed an increasing weakness on the part of the holders, while transactions remained comparatively limited. It was becoming apparent that the syndicate had not been equal to the occasion, and smaller holders were unable to continue their resistance. By November the market had become thoroughly weak, and before the end of the month the advance of the previous months had been entirely lost. At the beginning of December there was a moment in which there seemed to be indications of returning strength; but political uncertainty, financial weakness on the part of the holders, and vigorous resistance on the part of the financially stronger buyers speedily dissipated these hopes, and the year ended with prices as low as those of June. The following tables will give a good idea of the position at the close of 1887:

Silk conditioned at Milan during the last ten years.

Months.	1878–'79.	1879–'80.	1880–'81.	1881–'82.	1882–'83.
July	209,665	135,185	191,700	224,355	227,235
August	231,250	167,855	262,720	325,820	272,860
September	230,630	167,370	262,370	391,675	304,445
October	245,895	228,525	255,150	429,985	307,365
November	245,265	256,700	264,460	395,915	269,905
December	196,370	281,285	244,240	456,837	287,560
January	206,125	225,335	260,170	275,720	272,340
February	186,635	211,555	275,985	251,050	256,655
March	238,115	278,835	321,230	291,185	287,150
April	290,095	202,130	240,560	249,030	270,200
May	383,295	217,645	242,960	340,575	288,310
June	240,000	230,560	230,885	190,480	302,860
Total	2,903,340	2,603,980	3,052,430	3,822,627	3,346,885

Months.	1883–'84.	1884–'85.	1885–'86.	1886–'87.	1887–'88.
July	224,885	215,960	242,830	248,765	290,480
August	296,220	259,725	248,820	363,510	415,100
September	293,450	275,680	272,260	372,070	382,070
October	330,615	301,645	333,215	503,585	397,695
November	324,035	261,000	454,154	471,640	316,025
December	299,830	284,895	402,540	316,395	323,390
January	291,765	270,945	361,550	245,745	.....
February	290,610	252,295	252,430	236,180	.....
March	311,145	302,590	291,970	320,115	.....
April	364,405	248,970	221,175	315,455	.....
May	278,755	264,590	258,665	336,878	.....
June	186,975	224,670	263,580	240,470	.....
Total	3,492,690	3,162,965	3,606,189	3,970,805	2,124,760

Table of prices at Milan.

Date.	Organzines.					Trams.					Raws.				
	Grade.	Classical.	Sublimes.	Fine average.	Good average.	Grade.	Classical.	Sublimes.	Fine average.	Good average.	Grade.	Classical.	Sublimes.	Fine average.	Good average.
1883.															
June 30	16-20	65	63	60	58	.....	.....	.....	.....	.....	8-10	55	53	52	51
	18-22	63	61	59	57	.....	.....	.....	.....	.....	9-11	54	52	51	50
	20-24	62	60	58	57	20-24	62	59	58	57	10-12	53	52	50	50
	22-26	62	59	58	59	22-26	60	58	57	56	11-13	53	51	50	49
December 31	16-20	64	62	61	60	.....	.....	.....	.....	.....	8-10	55	54	52	51
	18-22	63	61	60	59	.....	.....	.....	.....	.....	9-11	54	53	52	50
	20-24	62	60	59	57	20-24	61	59	58	57	10-12	53	52	51	49
	22-26	61	59	58	56	22-26	60	58	57	56	11-13	52	51	50	48
1884.															
June 30	16-20	65	63	62	61	.....	.....	.....	.....	.....	8-10	55	54	52	51
	18-22	64	62	61	60	.....	.....	.....	.....	.....	9-11	54	53	52	50
	20-24	62	61	60	58	20-24	61	59	58	57	10-12	53	52	51	49
	22-26	61	60	58	57	22-26	60	58	57	56	11-13	53	52	50	48
December 31	16-20	63	61	59	58	.....	.....	.....	.....	.....	8-10	54	53	51	.....
	18-22	62	60	58	56	.....	.....	.....	.....	.....	9-11	53	52	49	47
	20-24	61	59	57	55	20-24	60	58	56	55	10-12	52	51	48	46
	22-26	60	58	56	54	22-26	59	57	55	52	11-13	52	50	47	45
1885.															
June 30	16-20	58	55	53	52	.....	.....	.....	.....	.....	8-10	48	47	45	.....
	18-22	56	54	52	51	.....	.....	.....	.....	.....	9-11	47	46	44	43
	20-24	55	53	51	50	20-24	54	52	51	50	10-12	46	45	43	42
	22-26	55	52	50	49	22-26	53	52	50	48	11-13	45	44	42	40
December 31	16-20	64	62	60	59	.....	.....	.....	.....	.....	8-10	55	53	52	.....
	18-22	62	60	59	58	.....	.....	.....	.....	.....	9-11	54	52	51	50
	20-24	61	59	58	57	20-24	60	58	57	56	10-12	53	51	50	49
	22-26	60	58	57	56	22-26	58	57	56	54	11-13	52	51	50	48
1886.															
June 30	16-20	62	60	58	56	.....	.....	.....	.....	.....	8-10	53	51	49	.....
	18-22	60	59	56	54	.....	.....	.....	.....	.....	9-11	52	50	48	46
	20-24	59	58	55	53	20-24	58	56	54	53	10-12	51	49	47	46
	22-26	58	57	54	32	22-26	57	55	53	51	11-13	50	48	46	45
December 31	16-20	68	66	64	62	.....	.....	.....	.....	.....	8-10	59	58	57	56
	18-22	66	64	63	61	18-22	64	63	61	60	9-11	58	57	56	54
	20-24	64	63	61	60	20-24	63	62	60	58	10-12	57	56	55	53
	22-26	63	62	60	58	22-26	62	61	59	57	11-13	57	56	54	53
1887.															
June 30	16-20	59	57	56	.....	.....	.....	.....	.....	.....	8-10	52	50	48	47
	18-22	58	56	54	53	18-22	56	55	54	53	9-11	51	49	47	46
	20-24	57	55	53	52	20-24	55	54	53	52	10-12	49	48	46	46
	22-26	56	55	53	52	22-26	55	54	53	52	11-13	48	47	46	46
December 31	16-20	59	58	57	.....	.....	.....	.....	.....	.....	8-10	51	50	.....	.....
	18-22	58	57	56	55	18-22	56	55	54	.....	9-11	50	48	48	47
	20-24	57	56	54	53	20-24	55	54	53	52	10-12	49	47	46	45
	22-26	56	55	53	52	22-26	54	53	52	50	11-13	47	46	45	53

For the first four months of 1888 the course of the silk market is accurately described as a liquidation at steadily decreasing prices. In February the silk conditioned at Milan reached a total of 278,070 kilograms Italians and 89,100 Asiatics. The prices had reached a lower point than at any time since October, 1885—the lowest on record; and the comparison is still further to the disadvantage of 1887, inasmuch as in 1885 cocoons cost,

in the fresh state, some 70 centimes less than in 1887, and for dried cocoons the difference was from 1 to 1½ francs. In March the silk conditioned amounted to 372,160 kilograms. The silk exported to the United States in these two months was likewise unusually large. In fact, these were months of complete surrender and disastrous realization. At the beginning of May the prices were as follows: Raws, fine average and sublimes, titles 9 to 16, from 41 to 44 francs per kilogram; organzines, same quality, title 18-20, from 50 to 51 francs; fine average, title 19-21, 49 francs. These prices have remained stationary.

The exports of raw silk from Milan to the United States for the twelve months ending May 31, 1888, as compared with the preceding twelve months, were as follows:

Month.	1886-'87.	1887-'88.
	Bales.	*Bales.*
June	217	278
July	207	228
August	377	365
September	416	423
October	563	437
November	483	243
December	427	270
January	181	276
February	163	387
March	287	438
April	519	407
May	500	424
Total.	4,340	4,176

One of the most striking features of the year was the breakdown of the syndicate, and an explanation of their failure would undoubtedly prove both interesting and instructive. Various reasons are alleged. One especially dwelt upon, and undoubtedly of some importance, is the lack of support exhibited by the reelers and holders. As a matter of fact, the financial weakness of many of these lessens their strength of resistance, and renders them subject to easily-exaggerated alarms. Add a natural lack of commercial aptitude, and an inability for combined action, and their influence, as a source of weakness, becomes evident; but beyond this there were other influences at work. As compared with the previous great operation of the syndicate, the attempt was managed with much less skill. In the first place, it may be doubted whether the time was well chosen. The operations were commenced in June, when all indications pointed to a remarkably abundant crop—hardly a time to speculate on a rise. It was claimed that the crop was 15 per cent. inferior to that of the preceding year, which figure was afterwards reduced to 10 per cent. Granting this, the result was a yield of 2,200,000 kilograms above the average of the past five years. Further, there was a good crop in Japan, and that in China was superior to that of preceding years. In both of these countries, but particularly in Japan, there has been a marked improvement in reeling, which renders them formidable competitors. The

syndicate extended their operations thither; but, although they were able to influence the markets somewhat, prices remained much below those of Italians. The Japanese, it may be assumed, reaped the greatest profit by the movement, for they were able to unload their silk at advanced prices, to the great detriment of Italians. The syndicate had undertaken more than they could carry out. They had underrated Asiatic competition. They claim to have discovered quickly the unfavorable position of affairs, and, having given up the idea, to have soon got rid of their stock without great losses. Their assertions, however, are received rather skeptically. As to their intentions for the future, it is hardly probable that, in view of their remarkable success in 1885–'86, they will be satisfied with their last unsuccessful venture; but it is safe to assume that the conditions will be studied more carefully, and that the plan will not long beforehand be the talk of the street and known in all its details, as seems to have been the case this year.

Another feature of the year remaining to be commented on, is that the quality of the silk delivered by the reelers was, in many cases, greatly inferior to that called for by the contracts; unfortunately, not an uncommon occurrence, but especially marked this year. Where a corner is attempted, all silk offered must be taken without too close scrutiny, for it would otherwise be thrown on the market. The temptation to run at a higher rate of speed and to use an inferior material would, in such cases, be very great, and this was precisely the course pursued by a large number of the reelers. Many complaints have been made by parties buying for their own consumption, and having no connection with speculation, but it occurs to no one to attempt by legal means to force the reelers to keep to their contracts. Law is proverbially uncertain nowhere more so than in Italy. Business precedents are so vastly different from those in America that excuses for non-fulfillment of contracts, such as a bad season, lack of water, and other similar reasons; in a word, the so-called "forza maggiore," which may be translated as a "dispensation of Providence"—excuses which it would never occur to an American to even offer—are not only proffered in law courts, but calmly excepted as good and sufficient. In this matter of dishonest reeling, as in certain other respects, the influence of the syndicate must be qualified as undoubtedly bad. American buyers must bear in mind this propensity of the reelers to deliver an inferior quality, and emphasis is to be laid upon the recommendation in a previous report to exercise care in the selection of houses to be dealt with and in the inspection of silk delivered.

This year the Italians have come to realize the growing importance of Asiatic competition, and the prevailing sentiment at present is one of consternation. Hitherto, although the consumption of Asiatic silks has been large and constantly on the increase, they have been employed for different purposes, and have thus not entered into direct competition with Italians. Asiatics have been used mainly in larger titles; Italians in finer titles, and especially whenever a regular and perfect thread was required. In the year 1865 European reeling-machines were first introduced into the East, and,

although at first they made their way very slowly, they have in late years been revolutionizing the Asiatic silk trade. The coarse, irregular home-reeled silk has been giving place to the machine-reeled thread, especially in Japan. For a long time the price of such silks was higher than that of Italians. This year they have undersold the latter, and the whole industry here is threatened. A few figures will throw a light on the situation. According to calculations made at Lyons the world's product of raw silk in the years 1884 to 1887, inclusive, was as follows:

Country.	1884.	1885.	1886.	1887.
France and Spain	568,000	591,000	729,000	800,000
Italy and Austria	2,952,000	2,625,000	3,405,000	3,750,000
Total of Europe	3,520,000	3,216,000	4,134,000	4,550,000
Levant (Syria, Broussa, etc.)	730,000	623,000	677,000	730,000
Exportations from Shanghai	2,695,000	2,631,000	2,444,000	2,450,000
Exportations from Canton	774,000	715,000	1,110,000	1,080,000
Exportations from Yokohama	1,346,000	1,372,000	1,484,000	2,100,000
Exportations from Calcutta	861,000	760,000	781,000	800,000
Total of Orient	5,676,000	5,478,000	5,819,000	6,430,000
Grand total (world)	9,926,000	9,317,000	10,630,000	11,710,000

It will be seen that Japan especially has made a great advance, and this is shown even more strikingly by the following figures. The exportations were, approximately: In 1870, 14,000 bales, of 48 kilograms each; in 1878, 19,257 bales, of 50 kilograms each; in 1883, 29,907 bales, of 55 kilograms each; in 1887, 37,000 bales, of 60 kilograms each.

Adding to the latter some 8,000 bales in stock at Yokohama, a total of 46,000 bales is reached. Considering the low figure at which the first exported home-reeled Japans, then known as Mybaschs, were sold, it is evident that silk production at the present or even lower prices must be very profitable to the Japanese. It it also Japan which competes with Italy and Cévennes in the excellence of the thread, which is said to be regular and even, and, moreover, of a light color. It is stated that Asiatic silks, on account of their white or light green color, have the great advantage over Italians of losing in the preparation for dyeing only 17 to 19 per cent., while the latter lose 22 to 23 per cent. for greens and 24 to 25 per cent. for yellows. The increased employment of Asiatics this year is well exhibited by the statistics of the silk conditioned at Lyons for the first four months of 1888, as compared with the corresponding months of 1887.

Evidently the Italians have cause for alarm, especially when they consider that China, having taken the first and most difficult step in the direction of progress, is likely, as the means of communication improve, to develop and put into competition with Europe and Japan its almost unlimited power of silk production. Men who have studied the question predict for silk a pro-

cess similar to what has occurred in wheat. American competition has reduced the price of the latter, formerly the great staple of Lombardy, to what seemed a ruinous figure, and has fixed this as the permanent price. Asiatic competition will do the same for silk, and the figure to which the price of silk is likely to settle is set between 35 and 40 francs per kilogram.

Raw silk conditioned at Lyons.

Country of origin.	First four months of 1887.	First four months of 1888.
	Kilograms.	*Kilograms.*
France	127,000	95,100
Italy	133,000	163,900
Syria and Broussa	44,800	61,900
China	206,300	238,800
Canton	99,100	176,100
Japan	134,900	209,000
Tussah	69,100	28,500

In the competition between Italy and Asia the conditions are by no means entirely in favor of the former. One factor to be taken into consideration is the depreciation of silver, which is equivalent to a reduction of several francs in the price of Asiatics. For transportation from Shanghai to Marseilles and Lyons the cost is estimated at about 45 francs per 100 kilograms, while from Milan to Lyons alone the expense is 30 francs, to which must be added 38 francs export duty. At present the new French tariff, which went into operation March 1, is an additional burden of 2 francs per kilogram, which, so far, has been borne mainly by the Italian settlers, and which deprives them of an advantage which they have hitherto enjoyed over their competitors. The plain duty of the Italian Government, under the circumstances, is the abolition of the barbarous export duties. This, however, is unlikely, in view of the financial condition of Italy. Indications are that at the most only thrown silks are likely to be exempted from this tax.

Within a few weeks the result of this year's silk harvest will be known. At present writing everything points to an abundant crop. The weather has been steadily good, mulberry leaves plentiful, and it is known that more "seed" was incubated this year than last.—MILAN, *June 18, 1888.*

HENRY C. CROUCH,
Consul.

The prune crop of Servia in 1886 amounted to 300,000,000 kilograms. One-third of this quantity was dried and packed for export; the balance was consumed on the spot or made into brandy. At the beginning of the harvest the price was 20 francs per kilogram, but rose to 25 and even 30 francs.

The wine product is steadily increasing, 900,000 hectoliters being the yield in 1886. The price on the spot is about 14 francs a hectoliter, but when carried to Marseilles or Nantes the charges, freight, and duties have increased the cost to 30 francs.

RICE AND SUGAR IN SYRIA.

Rice is not grown in Palestine, and sugar is never manufactured here. Though the sugar-cane is grown in small quantities at Jaffa and Ramleh, it is simply used for chewing, and is sold for from 2 to 4 cents per cane. Along the coast of Syria, where it is more abundantly produced, and is of better quality, it retails at about 1 cent per cane.

The fertile plains of Sharon and the valley of the Jordan would produce the sugar-cane in great abundance, and its not being more largely grown and profitably manufactured is only another instance of the anomalous condition of things existing in this country.*

It is perennial here, and where once planted does not require renewal; but when cut down shoots out canes from the original stump or stock without the least cultivation. The cane grows from 5 to 10 feet in height, and "tassels" or flowers in the month of February. The canes are cut from January to March, and during that time may be found in the Jerusalem market. They are much used by the natives, but only in the way above mentioned, viz, for chewing. Used in this way it is considered wholesome and fattening, those indulging in it soon showing its effects in their improved appearance and the smoothness and delicacy of their complexion.

As there is little or no cultivation connected with the production of the cane, and as labor is cheap, the wages of the *fellah* (peasant or common laborer) being about 24 cents per diem and finding himself, sugar could be produced here at reasonable prices.

MARKET PRICES.

As to prices of rice and sugar, there is no change at different seasons, unless when the market is overstocked, when the prices decline; or when, through quarantine regulations or other cause, the market is short, when prices advance, in the case of sugar sometimes reaching 8 cents per pound, or more.

At the present time rice retails at the following prices: From England, 3½ cents per pound; Genoa, 4 to 4½ cents; Egyptian (red), 3 to 4 cents.

The present retail prices of sugar are as follows: White sugar, granulated or crushed (from Trieste), 5¼ cents per pound; white sugar, granulated or crushed (from Marseilles), 6 cents; brown sugar (Egyptian), 5 cents.

THE DUTY.

The import duty on both rice and sugar is 8 per cent. ad valorem. The export duty (were any exported) would be about 1 per cent. ad valorem.

As rice is not grown and sugar is not made here, as already stated, I have considered it unnecessary to enter into further details on the subject.—JERUSALEM, PALESTINE, *April 26, 1888.*

HENRY GILLMAN,
Consul.

*At Jericho, in the Jordan Valley, are still seen the ruined remains of ancient sugar-mills; but from time immemorial no sugar has been made there. Twenty years ago sugar was used by the natives of Palestine as medicine only, and even now its employment by the peasant and poorer classes is strictly medicinal.

ADULTERATION OF AMERICAN LARD.

Lard in France is admitted duty free, but cotton-seed oil pays a duty of 6 francs ($1.20) per 100 kilograms (220 pounds) on the gross weight, or about 60 cents per 100 pounds net. The law is such that if any admixture is found the duty is levied as if such admixture formed the whole. Within a fortnight several parcels of lard coming from the United States have been stopped at the Havre custom-house and will now be subjected to a careful chemical examination by competent authorities in Paris, where the samples have been forwarded to. It is said here that these proceedings of the Havre custom-house, which were preceded by a similar act at Bordeaux, and now followed also at Marseilles, are in consequence of jealous competition of some American manufacturers, who claim perfect purity for their article, whilst other refiners are said to mix up to 20 and even 40 per cent. of foreign matter, principally cotton-seed oil, the lard-oil having first been extracted. English papers lately mentioned several cases where sellers of American lard, containing cotton-seed oil, were fined £5 each.—HAVRE, FRANCE, *August 2, 1888.*

F. F. DUFAIS,
Consul.

THE MEXICAN (VERA CRUZ) RAILWAY.

[Transmitted by Consul-General Sutton.—From Mexican Financier, June 9, 1888.]

The report of the directors of the Mexican Railway for the second half of 1887 was submitted to the shareholders at the forty-sixth ordinary general meeting, held at London on the 23d ultimo. The following are the chief points: The main line is 293 miles long, with 18 miles of sidings. There has been no extension of the line since the previous report.

The following statement shows the gross earnings of the line for the half-year under review, and for the two previous half-years. The average earnings per mile per week during the three half-years were, for the second half-year of 1887, £49 0*s.* 8*d.*; for the first half-year of 1887, £47 12*s.* 3*d.*; and for the second half-year of 1886, £44 1*s.* 7*d.*—the dollar being taken for the purpose of calculation and comparison at the customary value of 4 shillings.

	1887. July to Dec. £ s. d.	1887. Jan. to June. £ s. d.	1886. July to Dec. £ s. d.
Passengers (civilian, ordinary)	57,065 15 0	65,299 5 3	56,222 15 7
Merchandise	265,799 14 7	239,894 3 9	237,766 8 11
Pulque	35,375 9 3	34,582 6 11	23,750 3 4
Sundries	19,410 14 9	20,931 13 8	21,748 0 10
	377,651 13 7	360,707 9 7	339,487 8 8

The Jalapa line (73¼ miles) earned in the second half-year of 1887 £11,346, as compared with £13,007 and £10,529 during the two preceding half-years. The following are the figures for each period:

	1887. July to Dec. £ s. d.	1887. Jan. to June. £ s. d.	1886. July to Dec. £ s. d.
Passengers	3,104 19 6	3,049 6 1	2,926 5 4
Merchandise	7,707 5 3	9,478 14 10	7,127 5 11
Sundries	534 7 0	479 5 11	475 10 2
	11,346 11 9	13,007 6 10	10,529 1 5

The sum at the disposal of the company — after payment of the interest (£60,000) on the first debenture stock — is £129,863 7*s.* 4*d.* Out of this the directors recommended the payment of the full dividend on the first-preference stock, at the rate of 8 per cent. per annum, which will absorb £102,164; this leaves a balance of £27,699 7*s.* 4*d.* available for distribution among the holders of second-preference stock, and adding the cash balance of £1,112 12*s.* 7*d.*, brought forward from the previous half-year, there is thus a total to their credit of £28,811 19*s.* 11*d.* Out of this it is proposed that there shall be a dividend for the half-year at the rate of 5½ per cent. per annum on the second-preference stock, which will absorb £27,828 18*s.*, and leave a balance of £983 1*s.* 11*d.* to be carried forward to the credit of the holders of that stock.

The Government freight account for the half-year amounted to £1,569 12*s.*, of which £1,346 18*s.* 3*d.* was paid by December 31, and the balance since the close of the year. The subvention was collected for the half-year under review on the scale of 1½ per cent. of customs due. The company's share amounted to £20,213 4*s.* 9*d.*, and, when loss on exchange and charges were deducted, this realized £15,616 2*s.* 4*d.* After providing for the service of the second-mortgage debenture stock (£10,660) there remains a surplus of £4,956 2*s.* 4*d.*, which may be carried to the credit of the holders of first-preference stock in reduction of the amount of £13,697 16*s.* 5*d.* advanced by them. The cash balance of £2,952 15*s.* 1*d.* to the credit of first-preference stock is thereby increased to £7,908 17*s.* 5*d.*, and out of this it is proposed to pay to the holders of that stock a sum equal to one-fourth per cent., which will absorb £6,385 5*s.*, and leave a cash balance of £1,523 12*s.* 5*d.* to be carried forward to their credit, in addition to the sum of £8,741 14*s.* 1*d.* that will still remain due to them on subvention account.

A resolution will be submitted for approval, applying subvention to the full service of the second-mortgage debenture stock, sanctioning the repayment of advances according to priority of date, and authorizing the distribution of the above surplus, £4,956 2*s.* 4*d.*, among the holders of first-preference stock as having made the advances earliest in date.

The increase in earnings from goods traffic, as compared with the corresponding half of 1886, was £36,360; of which £25,946 arose from foreign traffic and £10,414 from national goods. The pulque traffic was increased by 10,121 tons, yielding £11,626 additional revenue; but as regards national goods, other than pulque, although there was an increase of tonnage for export, chiefly of minerals, there was a slight reduction in the receipts, caused by a diminution in the amount of building materials carried. The receipts from passenger traffic showed scarcely any variation. The earnings of the Jalapa line showed some improvement in both passengers and goods traffic, but the Vera Cruz pier and launch expenses were increased by £3,785, an increase chiefly due to the preparations, in the shape of additional lighters and their crews, for the extension of the company's landing operations at Vera Cruz.

The working expenses of the half-year showed a weekly average of £4,968, compared with £4,950 in the previous half-year and £4,852 in the corresponding period of 1886. Six thousand five hundred pounds sterling has been added to the locomotive reserve fund; which account now stands at £25,000 available for new engines when required. The unusual severity and prolongation of the rainy season interfered with the laying of steel sleepers, and early in the half-year the bursting of a water-spout caused a serious accident and some interruption of traffic near Vera Cruz. But the damage thus done to rolling stock was found not to necessitate any very costly repairs, and, as steel sleepers were ready to be laid when the season permitted, the work was actively prosecuted in the early part of the current half-year.

The average weekly earnings for the half-year amounted to £14,367, as against £13,949 in the previous half-year and £12,915 in the corresponding half of the year 1886. The weekly earnings of the first four months of the current half-year (1888), as advised by telegraph, show an average of £15,535.

The difficulties have at last been overcome which have so long beset the endeavors of the company to establish a system of through rates from foreign ports, via Vera Cruz, to Mexico

and other important cities of the Republic. At the beginning of the present year the company established an agency of its own at Vera Cruz, through which goods can now be sent at rates, inclusive of all charges, from ship to station at Vera Cruz, these charges being taken at fixed amounts, varying according to the nature of the goods, and according as the goods pay or are exempt from duty. Almost at the same time the company revised its tariffs, and the new tariff — which gives an average reduction of about 20 per cent. on foreign goods — came into operation on February 1. In spite of this reduction the returns of traffic have shown an increase of receipts, instead of a diminution, the weekly average for the first four months being £15,535, as against £14,432 for the first four months of 1887. This increase may, without hesitation, be connected with the general improvement in the prosperity of the country. Trade in Mexico is steadily advancing; great success has lately attended the efforts of the Government to maintain and heighten the credit of the nation, and the increased quantity of goods which the company is now carrying is only one of many signs that the purchasing power of the community is much larger than it was some time ago. The increased quantity of goods now carried may also be taken as an indication that the company is able to face, on fairly equal terms, the forms of competition that now exist. But it is scarcely necessary to repeat what has been so often pointed out, that, as time goes on, competition may assume new forms and press more heavily on the company.

The total loss on exchange during the half-year was £57,877 19*s.* 10*d.*, being an increase of £2,268 arising from the larger sum remitted. The average value of the dollar during the half-year was 37.34 pence, compared with 37.30 pence in the previous half-year. Consulting Engineer Rendel reports as follows: The line at the close of 1887 was in its usual good order, all ordinary repairs of maintenance having been executed on bridges, culverts, buildings, permanent way, and the road generally. The total length of the line now laid with steel rails is 272½ miles, of which 13½ are laid with 82-pound rails. There were also, at the end of the year, 26 miles of line laid with steel sleepers. The locomotive and rolling stock have been well maintained. Two engines — one of them a Fairlie — were condemned, provision having been made out of revenue to replace them when necessary by two engines. The pier at Vera Cruz, and the steam and cargo boats worked in connection with it, were in proper order. The Jalapa line was in its usual condition, and was equal to all the demands upon it.

AFFAIRS OF THE MEXICAN RAILWAY.

In another place we give a very full summary of the report of the directors of the Mexican (Vera Cruz) Railway Company for the second half-year of 1888, and any one taking the pains to compare this report with that of the Central Railway, recently summarized in this journal, can not fail to note that while both lines were in active competition in 1887 each road did better than had been anticipated. The only note of apprehension sounded in the report of the Mexican Railway directors is to be found in the paragraph where reference is made to some new future form of competition, evidently referring to the projected completion of the Interoceanic line from this city to Vera Cruz. That the line is able to meet the competition of the Central seems to be believed by the directors of the Mexican Railway. The fact is that both roads did a good business in 1887, owing to the improvement of general business in the country, a fact noted in both the Central's and the Mexican's report. The simple fact that the Mexican Railway earned, per mile, in 1887, £48 6*s.* 5½*d.*, as against £44 1*s.* 7*d.* in the second half of 1886, indicates a satisfactory condition of business. Here was a gain of £4 4*s.* 10½*d.* per mile, and no better indication of Mexico's reviving prosperity is to be found than in this excellent gain; and the other fact, that the approximate earnings of the railway for the first quarter of the current year were £207,600, as compared with £184,200 during the corresponding period of 1887, affords additional evidence of the continuance of the improvement in trade. During the present year the Mexican Railway receives 2¼ per cent. of the total customs collections, which must offset the continued depreciation of silver, and make up, in part, for anticipated competition. It is an open question if the Mexican Railway, even under another reduction of freight rates, might not make a gain in net earnings, provided the

directors would encourage a policy of competition and active reaching out for new business. The line requires, though it may be difficult to convince its management of the fact, a well-organized traffic department, for if the Mexican road is to compete successfully with the American-built roads it must take example, in some respects, of American methods dominant in the Central and National managements.

FINANCE.

The recent drop in the price of bar silver, coupled with the rumors of the purpose of the company having in hand the extension of the Interoceanic Railway to the Gulf to push construction vigorously, gave the "bear" party in Mexican Railway stocks a good opportunity, and, beginning three weeks ago, they have been hammering down securities without mercy. Mexican (Vera Cruz) shares have been driven down persistently, and show no present tendency to recover. Stock, first preferred, 110½; ordinary, 38.

RICE AND SUGAR INDUSTRIES OF SIAM.

Rice is now the great staple of Siam. It has been an article of export since 1856, when the treaty with Siam, then ratified, opened up the Kingdom to foreign trade. Prior to that the laws of Siam required that a three-years' supply of rice should remain in the country before any was allowed to be shipped abroad. When this law was abolished a demand for rice sprung up, and the natives, learning that it was a cash commodity, commenced planting for export, and yearly the acreage has steadily increased, thousands of Chinamen engaging in the business. The demand for land has caused canals to be opened through sections which have lain fallow for centuries, and thousands of acres which were useless and breeders of malaria now stretch out for miles with fields of grain, billows of emerald blades greeting the eye until lost in airy undulations on the rim of the horizon. The natives use the most primitive appliances in the cultivation of their fields—breaking up the ground with buffaloes and oxen attached to a wooden plow—but the soil is so prolific that the grain grows almost spontaneously. At times the fields require irrigation, the water for which is easily obtained from the rivers and canals which cross the country in every direction. As the land is level the water rises and falls with the tide; hence, the canals require no locks, and are navigable for boats, which do all the carrying, since there are but few wagon roads, which are traversed with buffalo carts—huge, unwieldy two-wheeled vehicles.

The rice fields are laid off in lots of about one-third of an acre each—surrounded by an embankment of earth, from 18 inches to 2 feet in height, for the purpose of holding water when the land is being prepared for planting or irrigation—for which the cultivator pays to the Government a tax of 28 cents per field.

To encourage the natives to open up new fields no tax is levied on the land the first five years. When matured the grain is cut with sickles and stacked similar to American wheat, and when needed is tramped out by buffaloes and oxen, six or eight animals being attached to a post, around

which the straw is strewn, and over which the cattle tramp round and round until the grain is separated from the straw. Then the straw is piled up for the cattle and the grain is winnowed from the chaff and dirt in a machine, a Chinese invention of a thousand years ago. The rice for export — Kow Moong and Kow Soon — is brought to the mills at Bangkok to be hulled, and then sacked for shipping. The natives hull their rice for home consumption in wooden mortars with wooden pestles; the latter they work with their feet, though many pound it out by hand. The first steam rice-mill at Bangkok was established by an American firm, but not finding it profitable they disposed of their plant. Now the preparation of rice for market has grown into a prosperous business. The large crop this year and the increased demand has induced Messrs. Markwald & Co. and others to put electric lights into their mills, so that they can run night and day. There are now fifteen steam rice-mills in Bangkok, one in course of construction, and two at Patriew, a city 30 miles west of the capital. Most of the mills are in charge of foreign engineers. The only fuel used in these mills is the husk of the rice. Notwithstanding the country is full of rice — the last year's crop being an unusual one — the drought, which has prevailed, has dried up the water in the canals to such an extent that only a small portion has so far reached market, while thousands of piculs are spoiling in the boats which are stranded in the water-ways. The superstitious Siamese say that this is a visitation from the Deity, as their astrologers have predicted that the next year will be one of famine, and that the grain is held in the country despite the efforts of man. Having traveled over a considerable portion of central Siam, I am satisfied that it has no superior as a rice-producing and fruit-growing country, and when it is opened up with railroads and modern appliances are used to cultivate the soil the crops will be quadrupled.

VARIETIES OF RICE.

1. Na Moong, which is sown broadcast over the fields and allowed to mature without further care, and in a few years yields its annual crop in the form of wild rice.

2. Na Soon, or garden rice, is allowed to grow to a certain height and is then transplanted. This is the rice of commerce, and is the best and highest priced of all grades.

The unit of land measure is the rie, almost identical with the English land unit. The average yield per rie is 1 coyan, which contains 20 to 22 piculs, according to the quality of the rice.

The freight by steamer to Europe ranges from 33 to 55 shillings per ton. The bulk of the Siamese rice crop is exported to China. The present rate is 32 cents per picul.

Good judges estimate the daily consumption of rice by the average Siamese family to be from 1 to 1¾ cocoa-nut shells, or from 1 to 1¾ English quarts.

EXPORTS.

The exports for 1886 were 3,618,497.46 piculs, valued at $6,542,938; for 1887, 6,662,620.50 piculs, valued at $11,419,613; increase, 3,044,123.04 piculs, valued at $4,876,675. The foregoing figures indicate an increase for the year 1887 of nearly 50 per cent. Total exports for 1887, $15,593,410; rice alone being $11,419,613.

Broken rice.— The exports of broken rice for 1886 were 55,366.92 piculs, valued at $63,724; for 1887, 79,714.16 piculs, valued at $79,525; increase, 24,347.24 piculs, valued at $15,801.

Paddy (unhulled rice).— The exports of unhulled rice for 1887 were 12,048.65 piculs, valued at $13,563.

SUGAR.

The manufacture of sugar in Siam is a ruined industry. Formerly there were large steam-mills owned by Europeans, but the export for 1887 has dwindled to 2,765 piculs, valued at $9,768. This decrease in the manufacture and export of sugar is owing to the Government tax and to the importation of cheap sugar from China, but sugar can grow well here, and the cane is used by the natives for chewing, being cut into pieces about a foot long and sold from the street stalls. Large quantities are consumed in this manner.—BANGKOK, SIAM, *May 21, 1888.*

JACOB T. CHILD,
Consul-General.

SPECULATION IN PIG-IRON.

[Transmitted by Consul Underwood.—From Glasgow Herald, July 12, 1888.]

Although we pride ourselves on the fact that Glasgow is a city of such multifarious industries as to be now well "hedged" from the vicissitudes of fortune, it is nevertheless the fact that the prosperity of the west of Scotland has been largely founded on the iron trade and is still greatly dependent on it. A new world, indeed, was opened to us by Robert Mushet's discovery of the famous "blackband" seam of iron-stone in Lanarkshire. That was eighty-seven years ago, although the discovery was not fully utilized until thirty years later. Then followed similar "finds" in Ayrshire and Stirlingshire. The industry has been revolutionized since then, and our native ores no longer suffice for the manufacture of our domestic "pigs." When, however, an industry is firmly established in a locality it is not easy to uproot it. Of late years the iron smelters of Scotland have had to work under considerable disadvantages, and on very different terms from those which prevailed when colossal fortunes were accumulated by the iron kings. Once upon a time the iron trade of Scotland was monopolized by the Highlands, and nearly a century and a half ago the furnaces at Bonawe, on Loch Etive, and elsewhere in Argyllshire, were famous. But the industry soon began to gravitate to the Lowlands, and in 1760 were founded the Carron Iron-works, an event which may be called the beginning of the iron industry of the west of Scotland. At these works pig-iron was first made at our own doors, as it were, and at these works, also, malleable iron was first made in Scotland. The tale of expansion since 1760, and still more since Mushet's discovery in 1801, does not need to be retold here; but these incidents are worth recalling, in view of the doom said to be threatening an industry which has been our mainstay and our pride for the greater portion of a century.

Whatever view one may take of the various opinions and arguments advanced in the correspondence which has been appearing in our columns during the last week or two, the conclusion must be generally admitted that the Scotch iron trade is in very evil case. According to Mr. W. V. Jackson, its misfortunes are due to the competition of Middlesbrough manufacturers depriving Scotch manufacturers of their own markets. According to Mr. John Ferguson, they are due to the rapacity of mineral landlords who exact royalties which the trade can not afford. According to others, they are due to the animosity of foreign governments, who impose duties upon Scotch iron for the sole purpose of killing the Scotch iron trade. In a multitude of counselors it is often difficult to find wisdom, and upon the whole the unbiased reader will not find it very easy to extract the truth from the various conflicting arguments. All, however, agree in this—that the enormous stock in Connal's yards has no business to be there, and that while it is there and is still growing there is no hope of the trade reviving. This, however, exhibits but a partial knowledge of the subject. There are some brands of iron which are made only for sale, and which always go direct into consumption. There are others which seem to be made only for purposes of speculation, which seem to be adapted for no other purpose, and which go direct into the stores to be converted into "warrants." Now it is to be remembered that the warrant market is not the iron market, and that a dull and drooping market for warrants does not necessarily imply a decadence of a great industry. There is, of course, a reflex action and a considerable amount of sympathy between the two currents—that of the regular course of the trade as between producers and consumers and that of the operations of the "ring." It is conceivable, however, that the two currents may move without any relation to each other, and, as a matter of fact, "flutters" occur often in warrants when makers' iron is calm and comfortable. Still it is beyond question that a larger demand for Scotch pigs for consumption would imply not only the stoppage of the growth of Connal's stock, but also the diminution of that stock. As it is at present these million tons sit upon the market like a nightmare. They are obvious to all the world, and all the world knows that so long as that stock exists—held for the most part in hope of a rise of a shilling or two—no great enhancement of the price of Scotch pigs can ever take place. Thus it is that Scotch iron-masters may have occasion to lament the day when warrants were invented and the iron ring formed.

If there had, however, been no such institution as Connal's store, what would have happened? The iron that is held there would have been forced into consumption. Neither makers nor dealers could have borne such a weighty and ever-increasing load, and the iron would either have been sold for such prices as could have been obtained, or else it would not have been made at all. Once made it would have had to be turned into cash somehow, and if it could not take the form of a negotiable document which passes from hand to hand, and then into the custody of a bank in security of advances, it would have had to be exchanged for the bills and checks of consumers. It is clear that a quantity like a million tons of iron could not have been forced into consumption in such conditions of competition as now rule. Either sales would have been forced at such prices as would have kept Middlesbrough not only out of the Scotch market, but also out of other markets, or a number of Scotch producers would have retired from the contest long ago. Probably both things would have happened, but we must deal with things as they are, not as they might have been. Mr. Jackson's proposal is virtually one to do at one fell swoop what would have happened naturally if there had been no warrant stores; but it is now too late. The Cleveland manufacturers are in the field also, and even if we keep Cleveland iron for a time out of Scotland until we sell our own stock, that only means that a stock will accumulate at Middlesbrough instead of at Port Dundas. It matters very little in the long run whether the million tons which oppress the market are stored on the Clyde or on the Tees. The distance is short and the carriage small, but the Tees is better situated for favorable freight arrangements for some markets than the Clyde is. We are dealing with the matter as if Cleveland and Scotch pigs were of equal value and would be equally acceptable to all consumers. As a matter of fact this is not so, but it is not neces-

sary to complicate the question by considerations of quality, which, after all, in the practical judgment of the markets, come ultimately to be one of price. Still, it is worth noting here, as having a very direct bearing on Mr. Jackson's proposition, that Scotch makers have no difficulty in selling Scotch-made iron of quality similar to that of the Middlesbrough iron. This is not what is going into stock, and of really favorite brands it is probable that the general stock in makers' and dealers' hands is diminishing rather than increasing. The stock that is increasing day by day in a manner which impresses more or less every metal market in the world is the stock of that comparatively modern and extremely unmarketable quality called "G. M. B." Nobody seems to want this quality, and at any rate nobody seems to want "store iron," and thus stuff is being week by week put into the store for which there is no market, present or prospective, beyond the speculative arena of those who deal in warrants and never want to see the metal. "G. M. B." feeds the store, and the store keeps the warrant market living. The effect upon prices is deadly, and Mr. Jackson says there is no remedy but that the Scotch masters should undersell the Middlesbrough masters, so as to cut them out of Scotland completely. The reply is that that is no remedy, for the Middlesbrough masters would simply pay back the Scotch makers in their own coin. Besides, Mr. Jackson omits to make any calculation of how long it would take Scotland to absorb the million tons in store, plus what the makers are ceaselessly turning out, even if consumers would buy "G. M. B." at a price. If Scotland could not absorb it, we must remember that there would be no other markets open, for the Cleveland men would be driven to sell elsewhere at whatever prices they could get. The question of royalties has not a direct bearing upon the general question of the overloaded condition of the market. Royalties may or may not be too high, in view of the altered range of prices of all commodities, but if they are too high in Scotland they are also too high in Cleveland and elsewhere in England. A comparison of the royalties current in the respective districts is immaterial, the point of the argument being that the relative position of the competitors remains the same.

The iron problem, in short, resolves itself into two heads. There is, first, the enormous stock in public store, held, as a rule, not by makers, but by dealers and speculators. Any reduction of the royalties will not affect the price at which these million tons were produced nor the price which the present holders paid for them. That stock is costing at the rate of £100,000 per annum to hold, for store charges and interest, and it is a simple calculation to find out how long it will take to "eat its head off" at the present range of prices. Has not the head been eaten off long ago, if to the first cost of these million tons of iron be added the interest and the other charges? The cost of storing, at any rate, may be considered as lost, as far as the trade is concerned, and what the end is to be no one can tell. It is certain that this enormous stock must sooner or later come into the market on its merits. The very weight of the stock must steadily bear down prices, and a point must eventually be reached at which an iron warrant will cease to be the readily negotiable document which it now is; but the second aspect of the question is that which concerns the current make. Everybody says that Scotch iron-masters can not possibly work at a profit under existing conditions. There is a case, then, for timely and amicable concessions on the part of those who both feed and benefit by the industry. Mineral owners and railway companies may well consider whether they would not do well to reduce royalties and rates in order to assist in preserving a suffering trade. This is not, however, a case for outside interference. If those concerned in the trade can not devise means for modifying it to the altered times no one else can help them. There is clearly too much iron in the world—or, at any rate, in this part of it. The supply has enormously overrun the demand, and there will be no relief and no permanent remedy until the equilibrium is restored. This must be either by the increase of demand or the decrease of supply, and from present appearances the latter movement is the more likely.

PEREKOP CANAL.

Russia has begun with the perforation of the strait of Perekop, which connects the Crimea with the Russian continent. The canal is to go from Perekop to Goutschar, Sivash, and Genitschesk, and is to be 111 versts long. It will be 65 feet broad and 12 feet deep — at each end of the canal a port will be built. It is stated that the 85,000,000 rubles necessary for the undertaking have been found. The shortest road from Genitschesk to the northern ports of the Black Sea will be through the new canal. The voyage from Odessa to Maripol is at present 434 sea miles long; through the canal it will be only 295. The work will take five years. Once the canal is finished, it will be easy for Russia to send her ships from the Sea of Azof to Otschakow, to the mouth of the Dnieper, and to Odessa, because they will no longer have to sail round the Crimea, and will not risk being captured by foreign ships in case of war. The chief reason for building the canal is the necessity for getting coal from the Don districts for the Russian fleet. — *London Economist, July 14, 1888.*

EGYPTIAN IMPORTS AND EXPORTS.

The sums total of financial results in the customs administration for 1887 are as follows:

Receipts	£ E. 936,941
Expenses	75,317
Net revenue	861,632

The cost of administration may, therefore, be placed at 8 per cent. of total revenues.

Merchandise from Turkey does not pay an import tax.

In the table presented below are imports by categories, values for 1886 and 1887, and a column showing differences between one and the other year:

Categories.	1886.	1887.	Difference between 1886 and 1887.
	£ E.	£ E.	£ E.
1. Animals and alimentary products of animals	177,305	237,017	+ 59,712
2. Skins and works in skins (leather)	157,863	136,620	— 20,453
3. Other products and growths of animals	81,904	65,084	— 16,820
4. Cereals, vegetables, flour and vegetable products, not in other categories	683,650	480,150	— 203,500
5. Colonial commodities and drugs	275,614	211,433	— 64,181
6. Spirits, beverages, oils	560,014	538,382	— 21,632
7. Books, papers, scrap-papers	103,862	105,836	— 1,974
8. Woods and coals	733,095	730,645	— 2,450
9. Stones, earths, dishes and plates, glasses and crystals	182,365	178,445	— 3,920
10. Dye stuffs and colors	204,106	245,686	+ 41,580
11. Chemical products, medicines, and perfumeries	108,671	85,009	— 23,662
12. Textile products	2,233,055	2,338,212	+ 105,157
13. Metals and works in metal	554,835	978,000	+ 423,165
14. Divers articles	314,907	278,018	— 36,889
	6,370,446	6,608,527	+ 238,081
Tobaccos, tombacs, and cigars	283,275	268,003	— 15,272
Total import revenue	6,653,720	6,876,530	+ 222,809

A table of exports is also presented in categories and by comparison as follows:

Categories.	1886.	1887.	Difference between 1886 and 1887.
	£ E.	£ E.	£ E.
1. Animals and alimentary animal products	11,222	19,032	+ 7,810
2. Skins and works in skins	117,139	98,959	— 18,180
3. Other products and growths of animals	20,903	25,360	+ 4,457
4. Plantation commodities, drugs, tobaccos	503,906	533,608	+ 29,702
5. Spirits, beverages, oils	3,375	3,551	+ 176
6. Books, papers, paper-scraps	35,766	35,275	— 491
7. Woods and coals	15,718	17,191	+ 1,473
8. Stones, earths, dishes and plates, glasses, etc	1,768	2,145	+ 377
9. Dye stuffs and colors	22,117	13,728	— 8,389
10. Chemical products, medicines, and perfumeries	11,414	6,247	— 5,167
11. Textile products	7,231,721	7,654,487	+ 422,766
12. Metals and works in metal	82,894	143,414	+ 60,520
13. Cereals, vegetables, flour, etc	2,043,770	2,287,604	+ 243,834
14. Divers articles	27,907	35,816	+ 7,909
Total	10,129,620	10,876,417	+ 746,797

In category 5 is embraced sugar, which is manufactured alone by the Government on lands improved for the purpose by Ismail Pasha. These properties are under the direction of the Diara Sauich. Sugar-cane is not the only product of these lands. Cereals, cotton, and other products are reared from them, but sugar mainly. The quantity of sugar exported in 1887 exceeds by about 14,000,000 pounds that of 1886, but its market value has not been so great.

Exports of metal (category 12) were mainly in ingots of gold and silver, sent mostly to England. Such transmission in 1887 amounted to £ E. 97,412.

Receipts on tobaccos, etc., are presented below:

Articles.	1886.		1887.	
	Kilograms.	Dues.	Kilograms.	Dues.
		£ E.		£ E.
Tobaccos in leaf	2,603,962	260,382	2,486,598	248,672
Tombac	244,169	24,421	302,491	26,401
Chewing tobacco and snuff	33,425	3,343	27,352	2,735
Cigars	102,019	16,328	70,090	11,241
Total	2,983,575	304,474	2,886,531	289,049

The expenses of the customs administration for the two years have been:

For 1886 ..... £ E. 75,317
For 1887 83,847

And yet this is a false statement, since the expenses of December, 1887, were passed to the account of January, 1888, and I have no means of stating what the December expenses were, except by average.

The customs maritime frontier extends over 1,386 kilometers. For its protection against illegal entry, the customs administration has placed at its service a force of 435 men, two steam and two sailing cruisers.

Following is one table showing the movement of money between Egypt and other countries, and another of money and merchandise:

Movement of money between Egypt and other countries during the years 1886 and 1887.

Country and year.	Importation.	Exportation.	Country and year.	Importation.	Exportation.
Great Britain:	£ E.	£ E.	Turkey:	£ E.	£ E.
1886	98,550	1,403,979	1886	457,733	825,516
1887	147,237	762,007	1887	1,107,113	295,628
France and Algiers:			Greece:		
1886	416,625	237,216	1886	8,142	.....
1887	1,098,967	248,419	1887	6,550	518
Indies:			Spain:		
1886	62,912	102,605	1886	394	26,749
1887	478	176,069	1887	.....	1,584
Austria:			Other countries:		
1886	51,912	4,661	1886	740,630	371,794
1887	103,423	15,227	1887	532,599	397,675
Italy:					
1886	1,769	.....	Total:		
1887	68,386	635	1886	1,838,797	2,972,520
Russia:			1887	3,066,740	1,898,062
1886	130	.....			
1887	1,987	.....			

Total movement of imports and exports, including merchandise and specie, during the last three years.

Country and article.	1885.	1886.	1887.
Exports:	£ E.	£ E.	E £.
Merchandise	11,424,970	10,129,620	10,876,417
Specie	1,293,660	2,972,520	1,898,062
Total exports	12,718,630	13,102,140	12,774,479
Imports:			
Merchandise	8,989,042	7,848,231	8,137,054
Specie	3,914,767	1,838,797	3,066,740
Total imports	12,903,809	9,687,028	11,203,794
Excess of exports	.....	3,415,112	1,570,685
Excess of imports	185,179	.....	.....

NOTE.—£ E. stands for Egyptian pound; £ E. 1 equals $4.9641.

CAIRO, EGYPT, *June 20, 1888.*

JOHN CARDWELL,
U. S. Agent and Consul-General.

COMMERCE OF SERVIA.

The Belgian minister at Belgrade reports that the trade of Servia was as follows:

Year.	Imports.	Exports.
	Francs.	*Francs.*
1884	51,734,830	38,714,506
1885	40,472,989	37,215,299
1886	51,094,436	40,718,677

The commerce of 1886 may thus be regarded as satisfactory, above all when the political situation at the opening of the year is considered. The influence of the Servian-Bulgarian war was still felt, and many firms of the best standing had fallen, seeming to mark the beginning of a serious commercial crisis. But peace stimulated trade; the corn and wine crop were both of good average, and the exports of pork and cattle experienced no serious setback. The trade of Servia was as thus distributed:

Country.	Imports.		Exports.	
	1885.	1886.	1885.	1886.
	Francs.	*Francs.*	*Francs.*	*Francs.*
Austria-Hungary	29,949,377	36,650,159	31,911,901	35,502,736
England	3,404,856	4,102,967	194,360	57,024
France	194,003	2,572,627	327,238	869,543
Germany	2,275,787	2,042,813	54,576	35,511
America	527,906	1,301,252	.....	.....
Roumania	862,190	1,095,639	281,139	89,191
Russia	793,728	742,467	.....	.....
Turkey	510,276	740,909	3,100,339	2,619,055
Italy	1,259,110	657,144	.....	173,318
Belgium	15,998	489,969	.....	.....
Switzerland	198,983	315,796	144,950	.....
Bulgaria	173,450	170,147	1,045,993	830,008
Greece	210,863	161,044	.....	.....
Bosnia	96,462	51,503	554,803	542,291

STEAM-SHIP LINE BETWEEN PERU AND PANAMA.

On the 30th of the present month the South American Steam-ship Company (Compañia Sud-Americann de Vapores) will establish a fortnightly steamer traffic, for passengers and freight, between this port and Panama—an extension of their service from the southern ports of Chili to Callao. For many years past steam communication between Panama and Callao has been limited to the facilities offered by the Pacific Steam Navigation Company, the pioneer organization on this coast, and the relief anticipated from that monopoly is regarded with much satisfaction. The vessels of the last-named company have never endeavored to connect regularly with those leaving the Isthmus for the United States, and the result has frequently been

prejudicial. The South American Company proposes to remedy this defect by arrangements entered upon with the Pacific Mail Company, from which a more regular delivery of passengers and mail matter is confidently expected. Not only will this change be most satisfactory as regards the mail service, but also will be avoided, in a great measure, the detention of passengers for many days at such a dangerous stopping place as is the Isthmus of Panama.

The South American Steam-ship Company is a Chilian organization, based on a capital of $3,500,000 (silver), and receives a subsidy of $225,000 from the Government of Chili on extending the service to Panama, and for carrying the mails. By a special understanding with that Government the larger vessels belonging to the company are to be placed in the national service in the event of war. The fleet of the company numbers eighteen large steamers, measuring 33,000 tons register, and are provided with all improvements of the most modern class. The commanders are principally Americans and English, and men of recognized skill and experience. From the circumstance that this company will make special efforts towards furnishing prompt communication and passage between this coast and the United States, I have thought it advisable to call the attention of the Department to the matter, and also in the case that publicity regarding the new enterprise might be desirable. It also seems probable that from the competition certain to ensue between the two companies the present very heavy rates for passage and cargo will be sensibly reduced.—CALLAO, *June 19, 1888.*

H. M. BRENT,
Consul.

PROGRESS OF BRITISH MERCHANT SHIPPING.

[From the London Economist.]

The return which has been recently issued by the board of trade, showing the progress of the British mercantile marine, as compared with other countries, for a number of years past, contains, as usual, much interesting information. In 1887 the total tonnage of the mercantile marine of the British Empire amounted to 9,136,000 tons, being a decrease of 111,000 tons as compared with 1886. Of this tonnage, 7,296,000 tons belonged to the United Kingdom, as against 7,322,000 in 1886, showing a decrease of only 26,000 tons, so that in the shipping tonnage of the colonies, etc., there must have been a decrease of 85,000 tons. The total tonnage was divided as follows:

Country.	Sail tonnage.		Steam tonnage.	
	1887.	1886.	1887.	1886.
	Tons.	*Tons.*	*Tons.*	*Tons.*
British Empire (including United Kingdom)	4,726,000	4,929,000	4,410,000	4,318,000
United Kingdom	3,214,000	3,360,000	4,082,000	3,962,000
Total	7,940,000	8,289,000	8,492,000	8,280,000

From this it will be seen that while the sail tonnage of the United Kingdom has fallen off by 146,000 tons, or nearly 4½ per cent., the steam tonnage, which is relatively many more times effective, shows a gain of 120,000 tons, or nearly 3½ per cent. The following figures show the total tonnage of the merchant navy of the British Empire and the United Kingdom, as compared with that of the principal maritime countries of Europe and the United States, for a series of years:

Total tonnage of merchant shipping.

Country.	1886.	1883.	1880.	1870.
	Tons.	*Tons.*	*Tons.*	*Tons.*
British Empire (including United Kingdom)	9,246,730	9,131,420	8,447,170	7,149,130
United Kingdom	7,322,020	7,196,400	6,519,770	5,617,690
Germany	1,284,700	1,269,480	1,182,090	982,350
France	993,290	1,003,680	919,300	1,072,050
Italy	945,680	973,330	999,190	*1,012,160
Norway	1,524,070	1,547,190	1,518,660	1,022,510
Sweden	500,390	519,640	542,640	346,860
Austria-Hungary	261,590	280,180	290,970	329,380
Russia (excluding Finland)	492,030	500,550	467,880	.....
Denmark	272,500	266,390	249,460	178,640
Holland	286,450	309,760	328,280	389,710
Belgium	86,840	86,360	75,660	30,150
United States (vessels employed in foreign trade)	1,111,180	1,302,090	1,352,810	1,516,800

*Including small coasting vessels.

The chief feature in this table is the comparatively moderate growth in the mercantile marine of any of our competitors since, say, 1880. For instance, the shipping tonnage of the British merchant navy, between 1880 and 1886, increased by 9½ per cent., and the tonnage of that of the United Kingdom alone by 12¼ per cent., whereas France and Germany show a gain of only 8 and 8¾ per cent., respectively. On the other hand, the United States lost ground to a decided extent. Holland also, in common with a few other continental countries, exhibits a decline. These figures show, as we have said, the total tonnage, and on turning to the steam tonnage alone we find that the character of the comparison is somewhat different. The principal figures are as follows:

Steam tonnage.

Country.	1886.	1883.	1880.	1870.
	Tons.	*Tons.*	*Tons.*	*Tons.*
British Empire (including United Kingdom)	4,318,150	4,013,680	2,949,280	1,202,130
United Kingdom	3,961,740	3,725,230	2,720,520	1,111,370
France	500,480	467,490	277,760	154,410
Germany	453,910	374,700	215,760	81,990
Italy	144,330	107,450	77,050	32,100
Austria-Hungary	90,090	76,780	62,740	49,980
Norway and Sweden	228,020	187,760	139,110	.....
Holland	108,980	101,670	64,390	29,450
United States (foreign trade)	176,630	171,900	146,600	192,540

Here we see that while the steam tonnage of the United Kingdom increased by 1,369,000 tons, or 46 per cent., between 1880 and 1886, the steam tonnage of France and Germany increased 80 and 110 per cent., respectively, in the same period. It is true, of course, that percentages are somewhat misleading, and that the absolute gain in the case of these two countries is small compared with our own, but, nevertheless, their relatively more rapid

advance should be noted, although, of course, it must be attributed to its proper cause, viz, the stimulus of the subsidies or bounties which have been granted by the state. As regards the carrying trade of the United Kingdom, it will be seen from the following statement that in 1887 a larger proportion of the foreign trade of this country was carried in British bottoms than at any previous period:

Tonnage of sailing and steam vessels engaged in foreign trade entered and cleared with cargoes and in ballast at ports in the United Kingdom.

Year.	Total tonnage entered and cleared.	Total tonnage of British vessels.	Percentage of British to total tonnage.
1887	65,161,000	47,950,000	73.6
1886	62,841,000	46,078,000	73.3
1885	64,282,000	46,389,000	72.2
1884	64,273,000	46,672,000	72.6
1883	64,961,000	47,039,000	72.4
1882	61,491,000	43,670,000	71.0
1881	57,949,000	41,543,000	71.7
1880	58,736,000	41,349,000	70.4
1875	46,277,000	30,944,000	66.9
1870	36,640,000	25,072,000	68.4

Subjoined are figures showing the proportion of foreign to total tonnage entered and cleared at the ports of the principal maritime countries in Europe and the United States:

Country.	1886.	1883.	1880.	1875.	1870.
	Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
United Kingdom	26.7	27.6	29.6	33.1	31.6
Russia	90.4	92.6	88.6	90.2	88.8
Norway	35.5	33.4	31.8	28.9	30.0
Sweden	64.2	63.7	62.8	66.0	68.2
Germany	57.2	60.0	60.9	61.8	64.1
Holland	70.0	70.6	69.1	73.1	71.7
France	64.1	65.9	70.0	67.4	68.5
Spain	*61.1	62.8	73.4	66.1	63.1
Italy	75.7	73.9	65.2	65.8	63.5
United States	78.5	80.1	81.1	69.0	61.8

*1885.

From the above figures it appears that since 1880 France has carried a substantially larger portion of her foreign trade in her own bottoms, owing, of course, to the large subsidies which the state has granted. Germany and the United States also show an improvement in this respect, but most other maritime countries have lost ground, a larger portion of their trade having been carried in foreign bottoms. Exactly how we have fared in competing for the ocean-carrying trade of the world it is not easy to determine, but the figures would seem to show that, despite all efforts to the contrary, the predominant position which we have so long held has been scarcely, if at all, affected.

The figures given below do not show whether the economy in the use of labor on board ship, which was affected in so marked a degree in the years previous to 1886, has recently been carried any further, since the totals for 1886 and 1887 include for the first time the number of Lascars and Asiatics under Asiatic articles of agreement. Allowing for this, however, it appears that the proportion of men employed for 100 tons of shipping has become rather smaller in the past two years,

Statement showing proportion of men (exclusive of masters) employed to every 100 tons of British sailing and steam vessels.

Year.	Sailing ships.	Steam-vessels.	Total.
1887	*2.61	*3.02	*2.84
1886	*2.64	*3.04	*2.86
1885	2.74	2.77	2.76
1884	2.80	2.83	2.82
1883	2.83	2.88	2.86
1882	2.84	3.00	2.92
1881	2.87	3.09	2.97
1880	2.90	3.25	3.04
1875	3.12	3.98	3.39
1870	3.25	4.67	3.52

*Including Lascars, etc.

The following table shows the number of British and foreign seamen serving in British vessels employed in the home and foreign trade, and also the proportion of foreign to British seamen (masters not included):

Number of seamen.

Year.	British.	Foreigners.	Total.	Percentage of foreign seamen.
1887	160,912	24,046	*184,958	14.94
1886	162,614	25,183	*187,797	15.49
1885	171,585	27,196	198,781	15.85
1884	171,871	27,783	199,654	16.17
1883	172,414	28,313	200,727	16.42
1882	169,920	26,017	195,937	15.31
1881	168,098	24,805	192,903	14.76
1880	169,692	23,280	192,972	13.72
1875	178,994	20,673	199,667	11.55
1870	177,951	18,011	195,962	10.10

*Exclusive of Lascars and Asiatics under Asiatic articles of agreement. Including these, the totals are, in 1866, 204,470; in 1887, 202,543.

The tonnage of vessels built in the United Kingdom during each year since 1880 has been as follows:

Year.	For home and the colonies.	*For foreign countries.	*Total.
	Tons.	*Tons.*	*Tons.*
1887	306,719	70,479	377,198
1886	293,000	38,528	331,528
1885	405,386	35,626	441,012
1884	497,442	90,832	588,274
1883	768,576	123,640	892,216
1882	667,275	115,776	783,051
1881	501,184	107,694	608,878
1880	403,841	69,055	472,896

*Including the following, built for war purposes for foreign countries: 1887, 3,966 tons; 1886, 840 tons; 1885, 546 tons; 1884, 2,339 tons; 1883, 270 tons; 1882, 447 tons; 1881, 5,338 tons; 1880, 385 tons.

EUROPEAN FORESTRY STATISTICS.

[From L'Economiste Français, July 28, 1888.—Translation.]

Countries.	Surface of territory.	Extent of forests.	Number of inhabitants.	Wooded surface per capita.
	Hectares.	*Hectares.*		
Germany	54,052,200	13,900,000	45,234,000	0.37
England	31,495,100	1,261,000	35,247,000	0.036
Austria	30,002,000	9,777,000	22,144,000	0.44
Belgium	2,495,500	489,000	5,336,000	0.09
Denmark	3,956,700	190,000	1,981,000	0.09
Spain	49,724,400	8,484,000	16,350,000	0.52
France	52,840,100	9,388,000	37,672,000	0.25
Greece	6,408,800	850,000	1,980,000	0.42
Holland	3,296,800	230,000	4,061,000	0.05
Hungary	32,311,400	9,108,000	15,726,000	0.58
Italy	29,632,200	3,056,000	28,429,000	0.13
Norway	31,819,500	7,806,000	1,806,000	4.32
Portugal	8,962,600	471,000	4,160,000	0.11
Roumania	13,140,100	2,000,000	5,376,000	0.37
Russia in Europe	541,963,700	200,000,000	84,373,000	3.37
Servia	4,859,000	969,000	1,669,000	0.58
Switzerland	4,139,000	781,000	2,846,000	0.27
Sweden	44,281,800	17,509,009	4,566,000	3.84
Turkey, Bulgaria, Bosnia, and Herzegovina	33,405,200	.....	8,277,000	7.77

RESULTS OF THE OPERATION OF BERLIN SICK FUNDS.

According to an official statement published a few days ago, and referring to the results of the Berlin sick funds in operation at the close of the year 1887, not less than 63 associations, looking to the support of the sick, were in full operation in Berlin under the control and supervision of the municipality. The number of members for 1887 is given at 237,257; contributions and fees of admission, 4,000,927.92 marks; receipts from interest, 183,426.55 marks; total receipts, 4,184,354.77 marks. The expenditures amounted, within the same period, to 3,545,582 marks, viz, 1,608,215 marks for relief to sick workmen, 213,528 marks for medical treatment, 517,238 marks for medicines and the like, and 618,461 marks for nurses and attendance. Most of the members (61,991) belong to the "Allgemeine Oetskrankenkasse" (general local sick fund for workmen without regard to trades); then follow, in importance, sick-funds unions of inn-keepers, 18,000; merchants, 13,209; machinists, 14,870; brick-layers, 18,627; tailors, 14,050; joiners, 14,450; locksmiths, 7,049; bakers, 1,244; type-printers, 4,234; girdlers, 3,875; tinsmiths, 4,378; painters, 3,545; book-binders, 3,452; turners, 3,310; hatters, 3,651; sculptors, 2,313; jewelers, 1,522; engravers, 1,182; upholsterers, 2,419; carpenters, 4,723; tin-founders, 72; barbers, 384; brewers, 991; confectioners, 747; hair-dressers, 167; furniture polishers, 640; butchers, 2,365; chimney-sweepers, 40, etc.

Fourteen works of Berlin have sick funds of their own, with 17,983 persons liable to be insured in cases of sickness; also some trade guilds have separate funds. The total number of persons insured in all the organizations to assist workmen in case of sickness amount to 261,160.

It is an important feature of these organizations — established in the interest of the workmen, mechanics, etc. — that membership is obligatory, and that all employés must either join independent associations or enter their names and pay a small percentage of their earnings to the organizations controlled by the municipality. The wages of the employés, of which a small percentage must be paid for the support of the organizations, are computed officially: Bakers, 3 marks per day; brewers, 3 marks; printers, 4.20 marks; cigar makers, 2.85 marks; confectioners, 2.65 marks; roofers, 3 marks; hatters, 2.80 marks; brick-layers, 3 marks, etc. The lowest are those of barbers, basket makers, varnishers, shoemakers, cloth weavers, etc., who receive 2.40 marks per day.

Of the 237,257 insured in the 63 organizations under the control of the municipality there are 175,278 males and 61,979 females — among the tailors not less than 9,850 females. Large numbers of females are likewise enumerated as employés in inns, taverns (bar-maids, etc.), hat factories, etc.

The cases of sickness in the Berlin local organizations (1887) are stated at 63,907, or 26.9 per cent., the number of days for the support of sick at 1,645,367; deaths, 2,523. The percentage of sick people is given at 27.8 per cent. for bakers, 38 for printers, 37 for machinists, 45.6 for butchers, 34.8 for blacksmiths, and 41.8 for tobacco workers. The lowest percentage is: Barbers, 17.1 per cent.; book-binders, 17.0; hair-dressers, 13.7; hatters, 13.5; photographers, 8.3; cloth shearers, 15.8; watch-makers, 10.

It is stated that, as a result of the compulsory character of insurance, nearly every employé of Berlin is actively enrolled, either as a member of the 63 local or other organizations.

Similar organizations exist in all of the large cities of the United States, though membership is not obligatory as here. The numerous public hospitals of Berlin offer great facilities for the treatment of the sick. The most eminent physicians attend the sick. The poorer classes pay no fees, while better situated persons — and it is quite customary here for sick people, high and low, rich and poor, to seek treatment at the public hospitals, either to enter them as boarders or visit them daily for treatment — have to pay for their board and treatment.

I have reported heretofore fully upon the character of the state insurance in case of accidents, etc., to which the insurance organizations for the care of the sick persons are an important auxiliary, while the subject of caring for working people of advanced age receives, also, earnest attention, and, apparently, will be realized at an early date, laws to that effect being at present under favorable consideration in the Reichstag as well as in the Prussian and other state legislatures of the German Empire. — BERLIN, *July 17, 1888.*

F. RAINE,
Consul-General.

MINES OF THE CHEMNITZ INDUSTRIAL DISTRICT.

The following are the official mining statistics for the year 1887 for the industrial district which is comprised chiefly within this consular district:

I.—PIT COAL.

Year.	No. of mines.	Quantity produced.	Value.
		Hectoliters.	*Marks.*
1872	12	2,850,877	3,133,692
1873	11	3,447,500	3,858,918
1874	13	3,747,265	4,107,126
1875	15	4,364,933	4,219,575
1876	16	5,188,143	4,050,150
1877	16	5,393,089	3,338,118
1878	14	5,929,153	3,298,653
1879	14	7,622,135	4,252,994
1880	13	8,500,462½	4,775,453.67
		*51,469	36,542.99
1881	13	9,798,453	5,413,300.56
		*64,836	43,440
1882	14	11,337,157	5,985,700.17
		*96,128	67,505.70
1883	14	12,577,674	7,232,987
		*100,850	75,640
1884	14	†1,075,647	7,413,234
		‡2,719	36,557
1885	14	‡1,087,636	8,287,323
		‡520	7,265

*Coke, centners. †Tons. ‡Coke, tons.

PRODUCT OF THE LUGAU-OELSNITZ COAL REGION FOR 1887.

The condition of the market during the year 1887 was good, and the amount of the production was increased 3.99 per cent over that of the preceding year. The amount of capital invested in these fields is 17,250,000 marks, which bore in 1887 a dividend of about 5¾ per cent.

The increased production of coal necessitated an increase in the number of men, amounting to 3.66 per cent., and wages were raised 3.1 per cent. The amount produced during the year was 1,251,767 tons, against 1,203,673.1 tons in 1886, an increase of 48,093.9 tons, or 3.99 per cent. The value of the coal mined in 1887 was 10,473,023 marks (8.36 marks per ton), against 9,263,826.54 marks (7.696 marks per ton) in the preceding year, an increase of 8.74 per cent. in the price of coal per ton. Of this output 130,250 car loads of 5,000 kilograms each were shipped from the station of Oelsnitz and 66,696 from Lugau, making a total of 196,946 car loads.

Of the fourteen mines in this district ten are the property of joint stock companies, two of mining companies, and two belong to individuals.

The entire area of these mines is 2,483.7598 hectares. The combined depth of the 28 pits belonging to these 14 mines is 14,623.7 meters, making the average depth 522.27 meters, the shallowest pit being 33.4 meters deep

and the deepest 894 meters. Of the 28 pits, 26 are supplied with stationary engines. In all 141 steam-engines, representing 6,875 horse-power, are in use in these mines. Ten ventilators and sixteen compressors supply the necessary air to the miners. The air from the compressors has also been used, to a certain extent, for driving the machines in the mines.

The amount of salaries paid to engineers and salesmen was 383,476 marks, making the average salary of this class of employés 1,956.51 marks for the year 1887. The total number of workmen was 6,182. Of these, 4,661 were miners and 1,501 day laborers, 140 of the latter being women. The total wages paid was 5,344,644 marks, an average yearly income per head of 867.36 marks, or $208.47 of our money, this being an increase of 3.1 per cent. over the wages of the preceding year. The average production per workman for the year was 203.1 tons. The casualties of the year were 9 fatally injured and 1,759 not fatally injured.

The following subordinate statistics are taken from the reports of four of the above-mentioned mines:

A.—THE GERSDORF COAL COMPANY.

	1887.	1886.	+ or — 1887.
			Per cent.
Total production.....hectoliters...	1,387,914	.....	.....
Number of workmen.....	522	520	+ 2 or .89
Average wages.....marks...	869.794	831.909	+ 37.88 or 4.55
Average daily wages.....marks...	2.7198	2.6290	+ *9.08 or 3.45
Production per man.....hectoliters...	2658.8	2,680	— 21.3 or .79
Daily production per man.....hectoliters...	8.31	8.47	— .16 or 1.89

*Pfennigs.

At the end of the year 1887 the miners' sick fund had a balance on hand of 8,534.25 marks, while the miners' pension fund amounted to 178,876.55 marks. The entire income was 1,060,453.48 marks, and the expenses amounted to 770,430.08 marks, leaving a total profit of 290,023.40 marks.

Month.	Produced.	Sold.	Used.	Value of coal sold and used at the mines.	Average price per hectoliter.
1887.	*Hectoliters.*	*Hectoliters.*	*Hectoliters.*	*Marks.*	*Pfennigs.*
January	125,406	109,889	10,674	95,523.09	79.23
February	115,956	101,935	9,480	87,910.65	78.90
March	133,986	115,613	10,870	97,570.53	77.14
April	99,684	87,970	9,157	93,037.72	75.20
May	108,966	95,151	8,942	77,904.89	74.84
June	108,438	93,371	9,059	76,688.68	74.87
July	104,040	94,600	8,788	80,744.39	78.10
August	113,442	100,188	9,826	86,780.55	78.88
September	105,060	91,810	9,122	79,566.26	78.83
October	112,350	96,532	9,736	86,526.05	81.42
November	142,716	126,419	11,028	112,144.39	81.59
December	117,870	104,742	10,329	91,924.07	79.88
Total.	1,387,914	1,218,220	117,011	1,046,321.27	.....

The preceding table shows the monthly report of business. Of the 1,218,220 hectoliters sold, 1,144,380 hectoliters were shipped by railway in 19,073 cars, and 73,840 hectoliters were carried away in wagons.

In comparison with 1886 the year 1887 shows a slight improvement, as is demonstrated by the following facts:

	Per cent.
Decrease in production	.42
Increase in receipts	6.29
Increase in average price	7.15
Increase in cost of production	5.74

B. — THE LUGAU-NIEDERWUERSCHNITZ COAL COMPANY.

In 1887, 937,076 hectoliters were produced by these mines, against 922,817 hectoliters in 1886, showing an increase of 14,259 hectoliters. Of the amount sold 667,680 hectoliters were shipped in 11,502 railway cars and 47,854 hectoliters in wagons, making the total sales 715,534 hectoliters, which was 76.358 per cent. of the total production. The following table shows the amounts and varieties of coal sold:

	Hectoliters.	Per cent.
Soot coal	325,933	45.55
Lump coal	52,301	7.31
Washed nut coal, 1	46,169	6.45
Washed nut coal, 2	106,357	14.87
Washed nut coal, 3	90,500	12.65
Dust coal	88,372	12.35
Coal waste	5,017	.70
Carboniferous limestone	876	.12
Total	715,534	100

The average selling price per hectoliter in 1886 was 66.283 pfennigs, while for 1887 it has risen to 74.276 pfennigs. The receipts from the sale of coal during the year were 531,471.73 marks. To this is to be added:

	Marks.
Value of coal on hand	773.50
Value of coal used at the mines	11,203.25
Value of coal used at the brickyard	4,847.40
Other receipts	6,117.53
	554,413.41

The expenses were:

	Marks.	
Wages, materials, etc	388,982.18	
General expenses	48,599.18	
Interest	14,337.77	
Cost of coal used, etc	9,644.41	
		461,563.54
Net profit		92,849.87

At the close of the year the miners' pension fund amounted to 188,800.51 marks, showing an increase of 4,608.72 marks. The amount paid in pensions during the year was 11,683.69 marks. At the end of the year the miners' sick fund amounted to 4,816.73 marks.

C.—THE GOTTES SEGEN COAL COMPANY OF LUGAU.

The work of these mines was somewhat embarrassed, owing to the fact that many of the younger workmen left, seeking higher wages in neighboring mines.

The coal production for 1887 was 1,299,025 hectoliters against 1,353,611 in 1886, showing a decrease of 54,586 hectoliters = 4.03 per cent. The amount sold in 1887 was 1,119,521 hectoliters, valued at 842,273.79 marks, against 1,181,502½ hectoliters, valued at 816,497.30 marks, in 1886. This shows a decrease in the amount sold of 61,981½ hectoliters, but an increase of 25,776.49 marks in the value of the coal. The value of the sold portion of the deposit remaining after washing coal was 1,735.15 marks. The average price per hectoliter of the coal which was sold, exclusive of the coal and coal deposit used on the premises, was 75.23 pfennigs in 1887 against 69.11 in 1886, showing an increase of 6.12 pfennigs. The cost of producing one hectoliter in 1887 was 56.69 pfennigs against 55.83 in 1886, showing an increase of 86 pfennigs. The cost of production, in pfennigs, is itemized thus: Wages, 36.41 = 64.23 per cent.; utensils and materials, 12.95 = 22.84 per cent.; general expenses, 5.67 = 10 per cent.; interest, etc., 1.66 = 2.93 per cent.

	Marks.
Receipts for the year 1887	896,204.60
Expenses for the year 1887	718,814.06
Gross profit	177,390.54
Improvements and repairs	60,000.00
Net profit	117,390.54

The total number of employés was 563, of whom 450 were employed under and 113 above ground. The average number of days' work done per head in 1887 was 342.3 against 336.9 in 1886; average earning of workman per day in 1887 was 2.485 marks against 2.372 in 1886; average yearly earning in 1887 was 850.31 marks against 799.13 in 1886; average daily production per man in 1887 was 6.73 hectoliters against 6.88 in 1886; average production for year 1887 was 2,303.68 hectoliters against 2,317.87 in 1886. Of the 1,299,025 hectoliters of coal produced, 702,814 hectoliters were lump coal and 596,211 hectoliters dust coal.

At the end of the year 1887 the miners' sick fund amounted to 15,689 marks and the miners' pension fund to 227,734.38 marks. During the year 65,670 hectoliters of coal, valued at 29,796.09 marks, were used in the works, in addition to 83,668 hectoliters of coal deposit, valued at 4,183.40 marks, making the total value of fuel used on the premises 33,979.49 marks. The total number of railway car loads shipped during the year was 17,703.

D.—THE DEUTSCHLAND COAL COMPANY OF OELSNITZ.

The result of the year's work at these mines was very unsatisfactory, owing to frequent explosions of fire-damp, which necessitated the closing of a large part of the mines. Many of the men consequently left the works from fear, and strangers, more or less unskilled, were employed in their stead.

The increase in the number of workmen over that of the preceding year, necessitated by the work in closing several gangways and by unusual demands for repairs, was 3.54 per cent. The amount of the coal production, in comparison with 1886, sank 16.94 per cent., and the amount of sales was 26.10 per cent. less than in the preceding year. The rise in the selling price, per hectoliter, was 5.43 pfennigs, or 7.38 per cent.

On account of the unusual amount of repairs, 15.57 per cent. of the total production was used on the premises; the amount thus used in 1886 being only 7.71 per cent. The increase in the cost of producing a hectoliter was 21.16 pfennigs, an advance of 39 per cent. The average increase in wages was 5.37 per cent. Shipments by rail fell off 29.39 per cent., and local sales, 24.34 per cent., as compared with those of 1886.

Since the opening of the branch railway to the mines, on October 15, 1878, to the close of the year 1887, 73,598 car loads of coal have been shipped from these mines. The amount produced in 1885 was 977,358 hectoliters; in 1886, 1,110,990; in 1887, 922,812; amount on hand, from 1886, 1,028 hectoliters. Amount produced in 1887:

	Hectoliters.
Soot coal	121,323
Pitch coal	19,693
No. 1 lump coal	32,201
No. 2 lump coal	76,825
No. 1 chestnut coal	97,833
No. 2 chestnut coal	71,798
No. 3 chestnut coal	91,382
Dust coal	203,190
Useful wash deposit	73,188
Coal waste	129,322
Amount on hand	7,085
Total	923,840

Total amount of sales for 1887, 570,559 hectoliters, divided thus: 516,028 hectoliters = 90.44 per cent., 8,066 car loads shipped by railway; 54,531 hectoliters = 9.56 per cent., local sales; total, 570,559 hectoliters = 100 per cent., the receipts therefrom being 450,423.59 marks — 117,154.01 marks less than in 1886.

The average selling price per hectoliter was 78.94 pfennigs. The amount used for the boilers, blacksmith shop, and heating purposes was 143,685 hectoliters of coal, valued at 57,047.55 marks, making an average value of 39.70 pfennigs per hectoliter. In addition to this the entire amount of useful wash deposit, 73,188 hectoliters, valued at 8 pfennigs per hectoliter, was used for firing the boilers. The following table shows the monthly report of business:

1887—months.	No. of men.	Produced.	Sold.	Used.	Value of coal sold and used at the mines.	Average price per hectoliter.
		Hectoliters.	*Hectoliters.*	*Hectoliters.*	*Marks.*	*Pfennigs.*
January	429	82,626	50,067	16,359	42,120.41	63.41
February	408	50,904	29,802	16,355	27,680.48	59.97
March	415	51,828	25,149	18,099	26,492.00	61.25
April	429	45,504	23,757	16,008	23,276.60	58.53
May	441	59,406	35,078	17,068	31,282.80	59.98
June	437	88,014	48,842	17,746	40,285.03	60.49
July	432	85,932	57,855	17,846	48,354.75	63.87
August	452	91,854	70,739	17,789	58,994.18	66.63
September	448	79,686	57,219	18,315	49,997.77	66.19
October	529	96,114	59,495	20,529	56,129.20	70.14
November	573	100,788	61,367	21,138	59,882.81	72.58
December	584	90,156	51,189	19,621	48,830.27	68.95
	468	922,812	570,559	216,873	513,326.30	65.19

The average cost of production for the years 1886 and 1887, per hectoliter, was:

	1887.	1886.
	Pfennigs.	*Pfennigs.*
Wages	44.36	32.62
Materials, etc	18.24	12.05
General expense	6.18	5.94
Interest on loans	6.66	3.67
Total	75.44	54.28

	1887. Hectoliters.	1886. Hectoliters.
Average production per man was	1,971.8	2,457.9
Average production, daily, per man was	6.06	7.64

The average number of days' work, of eight hours each, was 323.8 per miner; the average number of days' work, of twelve hours each, was 329.8 per laborer. The wages for the years 1886 and 1887 averaged as follows:

	1886.	1887.
	Marks.	*Marks.*
Miners.....per year	808.82	878.92
Miners.....per day	2.5552	2.7143
Day laborers.....per year	739.04	714.52
Day laborers.....per day	2.1494	2.1661
Regular laborers.....per year	787.91	839.22
Regular laborers.....per day	2.4487	2.5801

Average daily absence: Not caused by sickness, 45.9 men = 12.9 per cent. of the whole number; caused by sickness, 15.9 men = 4.5 per cent. of the whole number; total, 61.8 men = 17.4 per cent. of the whole number. New men engaged, 473; number of men discharged, 327. At the close of 1887 the miners' sick fund amounted to 9,154.15 marks, and the miners' pension fund showed a balance on hand of 105,197.42 marks.

II.—Brown Coal—Lignite and Peat.

A.—The brown coal stock company ("Gluckauf") at Borna.

The condition of this company in 1887 is represented as being satisfactory. The total production was 15,705 tons, valued at 57,166 marks. The gross sales amounted to 193,564 hectoliters, valued at 50,785.22 marks—2,223.66 marks less than in 1886. The average price per hectoliter was 26.25 pfennigs; the average wages per day of twelve hours were: diggers, 2.64 to 3.49 marks; carriers, 2.07 to 3.09; laborers, 1.64 to 1.79.

All the workmen are insured in the miners' sick fund for Borna and vicinity. During the year seventeen persons were helped to the amount of 196 marks in all.

B.—The "Himmelreich" brown coal company, at Benndorf.

The number of workmen employed by this company was 52. The production was 16,002 tons and 7,339,000 coal bricks. Some competition was experienced on account of increased sales of Bohemian brown coal.

The Marienberg Silver Company.

The total production of ore in this mine during the year 1887 was 233,103.1 kilograms, and the total production of silver 1,361.69 kilograms, valued at 148,949.25 marks. The number of men employed was 111, representing with their families 346 heads. The average wages of the miners per day of twelve hours was from 3 to 4 marks.

Coal Mining Statistics of the Industrial District of Chemnitz for the year 1887.

A.—Pit coal.

Name.	No. of men employed.	Production.	
		Amount.	Value.
		Tons.	*Marks.*
Bockwa-Hohndorf	746	139,499	1,140,543
Concordia	336	57,174	424,156
Deutschland	433	73,302	515,642
Gersdorfer Coal Company	478	95,805	795,876
Gottes Segen	572	110,319	811,557
Hohndorf	458	100,201	788,361
Kaiser-Mine*	425	85,734	656,285
Lugau Coal Company	509	97,733	735,930
Lugau-Niederwuerschnitzer Coal Company	380	80,516	505,582
New Sewaldschacht	23	1,686	14,750
Oelsnitz	580	112,089	946,448
Rhenania	273	42,465	328,393
Count of Schönburg's mine	351	51,381	326,956
Vereinsgineck	242	39,792	296,844
Total	5,806	1,087,636	8,287,323

*Coke, 590 tons; value, 7,265 marks.

B.—Brown coal.

Name.	No. of men employed.	Production.		
		Brown coal.	Coal bricks.	Value.
		Tons.		*Marks.*
Altengroitzsch*	98	40,250	7,000,000	167,500
Auferstehung	6	670	.....	3,015
Bärensprung	5	188	150,000	2,700
Berthold	2	104	80,000	1,240
Böttcher	1	149	82,000	1,465
Borna-Lobstädt	49	20,270	10,280,000	167,326
Belohnung	47	33,862	1,300,000	110,609
Crasselt	2	88	70,000	1,260
Frommhold	5	900	1,000,000	6,700
Frühmesse	6	1,375	1,100,000	8,800
Funke	1	50	.....	160
Fuhrmann	2	36	25,000	405
Glückauf-Blumroda	31	22,600	.....	65,100
Glückauf-Eschefeld	28	10,125	17,000	32,494
Gottes Segen	19	6,165	1,200,000	19,000
Gottes Helf	11	.....	.....	.....
Heinze	2	125	100,000	1,100
Hessel	2	253	200,000	1,730
Heinicke	6	1,346	1,075,000	10,750
Himmelbreich	59	16,896	7,800,000	96,362
Hunger	2	95	17,600	583
Johst	2	115	64,500	1,186
Karthe	2	520	400,000	2,440
Krausse	6	1,503	365,000	5,768
Kretzschmar	5	1,085	700,000	6,795
Lägel	3	524	400,000	3,480
Lange	6	930	600,000	5,820
Lange	5	1,050	600,000	6,090
Marie	27	12,000	.....	24,000
Möhler	4	360	204,000	3,560
Müller	3	143	100,000	1,920
H. Müller	6	930	600,000	5,790
W. Müller	1	68	40,000	692
Mehnert	3	106	62,000	1,356
Müller-Eschefeld	19	207	.....	690
Rathsgrube	17	7,000	.....	16,000
Rösner	14	3,000	2,000,000	25,500
Seirig	3	699	400,000	3,057
Seirig (*a*)	5	2,639	556,000	7,096
Seirig (*b*)	2	300	250,000	1,625
Staatsfiscus	9	1,312	77,500	6,092
Thieme	21	850	2,164,000	18,702
Uhlemann	3	1,464	720,000	7,420
Uhlbricht	3	150	120,000	2,160
Werl	5	675	640,000	4,923
Wetzig	40	12,329	21,300	38,084
Total	598	205,506	42,580,900	898,549

* Briquettes, 21,000,000; value, 56,700 marks.

There were, also, in 1887, within the limits of this district, 51 small mines, producing silver, lead, iron, manganese, copper, tin, white arsenic, bismuth, cobalt, nickel, sulphur, and gold, employing 273 persons; the total production was 172,650.06 marks.—CHEMNITZ, GERMANY, *July 7, 1888.*

GEO. H. MURPHY,
Consular Clerk.

THE PLASTERING OF WINE.

Since the production of wine in the celebrated districts has fallen off, through the ravages of phylloxera and cryptogamous diseases, the less noted wine of the central departments of France has been brought into greater requisition. These wines differ materially from the famous growths of the Bordeaux and Burgundy districts; and as they are replacing these more renowned varieties special attention is being given to them—the merchants who buy them for home use or exportation are doing their best to make them as agreeable as possible, to take the place of their illustrious neighbors. Resource is had to various chemical additions more or less injurious to health, but which serve to increase the market value of the wine. As the greater part of the army supply comes from these regions, special attention is given to their analysis. There is now being discussed before the Academy of Medicine at Paris a question of great importance to all wine merchants and exporters. The question under discussion is whether the plastering of wine is injurious to public health or not? The practice of plastering wines, or adding sulphate of lime, is very ancient; it is unknown when or where it originated, but for the last twenty-five years it has been a subject of dispute among the highest hygienic authorities—wine growers and merchants—in France. At times its use has been condemned and again permitted. Just now it is the leading question before the Academy of Medicine, being made a special subject at a number of meetings. This report is a synopsis and review of the proceedings that have taken place during the sessions of the academy on this important subject.

The sulphate of lime is added after the first fermentation, or while the wine is in the vat, and it is also mixed with the grape must. This last process has for its object the rendering soluble the different elements of the wine. The general rule is to put 500 grams to the hectoliter of wine, but the greater number of wine makers throw in the lime without weighing. The advantages said to be gained by the use of sulphate of lime are these: Fermentation is increased very much; is more rapid and complete; the color is brighter and more permanent, and the wine will keep for a much longer period. For the wholesale dealer this greatly enhances the value of the wine, but the questions to be considered are these: Does the addition of sulphate of lime in any way render wine injurious to health, and what are the chemical changes caused by this plastering? The principles, briefly stated, are these: Ordinary wine in its normal condition contains a certain amount of the bi-tartrate of potash; this readily acts on the sulphate of lime, and forms an acid sulphate of potash, and there is precipitated an insoluble bi-tartrate of lime, varying according to its degree of alcohol, the wine dissolving a portion of the sulphate of lime. Natural wine contains, at the maximum, about

half a gram of sulphate of potash per liter. This quantity is increased from five to ten fold by the action of the lime, and at the same time the proportion of the bi-tartrate of potash diminishes to such a degree that it can be said that the lime substitutes for this salt the acid sulphate of potash. Finally, in wine treated with lime, sulphuric acid is found in a free state; also, the sulphate of magnesia. Have not these serious alterations a bad effect on the health of the consumer? It is twenty-five years since this question was propounded, and it is yet unsettled. The proprietors and wine merchants have never owned themselves vanquished. These wine dealers, wishing to reap the benefit derived from plastering wine, take advantage of the fact that chemical science has not yet given a final decision upon the subject, and medical and hygienic researches are incomplete. In brief, the commercial interests have profited wonderfully because of the difficulty found in solving this problem. This difficulty has decreased greatly, and is disappearing before chemical analysis and clinical observation. The hygienists persevere in the belief of the injurious effects of plaster, and now the Government takes hold of the matter anew, asking for the advice of the hygienic committees and the Academy of Medicine. It is the reopening of the suit formerly gained by the wine dealers. M. Marty, who was appointed by the academy to report on this subject, after defining and noting the changes that wine undergoes by the action of sulphate of lime, reviews the history of the researches and debates which have taken place on this subject. In 1856 the hygienic committee decided in favor of plastering—M. Bussy, who was appointed to report at that time, found in its favor. Nevertheless there were numerous protests. The following year numerous evil consequences resulted from the plastered wines at St. Affrique, in the department of Aveyron. The doctors state that those who drank of this wine had an unquenchable thirst (cephalalgy) and an insupportable dryness of the throat. These are only the superficial symptoms and lesions that plastered wines produce in the organism. While the hygienic committee is being occupied with this subject the Chamber of Commerce at Montpellier has charged chemists to study this practice, which is now brought under suspicion. The report of M. Bussy gave satisfaction to the wine merchants, and the work of the chemists furnished them with triumphant arguments; but, after the serious results mentioned above, the debate was reopened. In 1858 M. Poggiale, after new researches, found in the ashes of plastered wines an almost entire absence of bi-tartrate of potash, and an entirely abnormal proportion of sulphate of potash. He concluded that the practice of plastering had better be abandoned, as he considered it injurious to health. The "conseils generaux" entered into the lists after the decision given by the court at Roanne, which was against plastered wine. They demanded a new scientific inquiry. For a second time the hygienic committee, in spite of a spirited protestation from Michel Levy, declared in favor of plastering. M. Buignet and M. Bussy re-analyzed the plastered wine by a new process and found free sulphuric acid, which was formed by the action of bi-tartrate of potash and

sulphate of lime. The scientific problem took a great step in advance, deciding that plastering could not be proved inoffensive. A compromise was made, and it was conceded that plastering must be done with moderation. In 1867 the war department decided that it would tolerate 2 grams per liter; but the physicians declared that the plastered wine had a serious effect on the urinary passages. In 1879 this question was brought for the third time before the committee, who did not admit the harmlessness of plastering, but said that 2 grams per liter were not dangerous.

The inquiry made in 1884 by the minister of commerce and agriculture resulted as follows: They found in the summing up of the answers given by the departmental assemblies, the chambers of commerce, the hygienic societies, the administrations, the large proprietors, and wine merchants that they were unanimous on one point—that it is necessary to plaster moderately, and that it is best to reject for consumption all wines that contain more sulphate of potash than that fixed by law. It was stated, if wines in a normal condition only contain 60-100 of a gram of neutral sulphate of potash, it will never contain from 3 to 7 grams of acid sulphate of potash, as reported to have been found in wines that have been plastered to excess. M. Marty settles the question from a hygienic view. He reports several experiments which have been made to show the harmlessness of wine plastered to 4°. All these experiments fail for want of precision or exactness in their method. It is an incontestible fact that plastered wines have occasioned functional troubles and organic injuries; and it can not be said in truth, as those in favor of the plastering state, that no complaint has been made against plastered wine. These complaints are loud, numerous, and reiterated, and have never been silenced. All familiar with medical science know that a solution of acid sulphate of potash, in which sulphuric acid is in a free state, acts as a purgative, and a caustic in certain cases. As regards the opinion of abolishing plastering, the hygienic committee is not unanimous in their decision. It is the opinion that a moderate plastering is necessary for the utilization, preservation, and transportation of a certain class of the poorer grades of wine, whose loss would be a disastrous thing for the wine growers. But they should continue the practice, so that the proportion of acid sulphate does not exceed 2 grams per liter. This proportion is sufficient to obtain the commercial advantages for which the lime is used. In conclusion, M. Marty examines and refutes certain arguments recently produced in favor of plastering. He recognizes that the conditions of the non-combination of the neutral sulphate and the acid sulphate of potash are not well known, but we have a law furnished by nature that will guide the hygienists in the study of this question, viz, that natural wines never contain more than 65-100 of a gram of the sulphate of potash per liter. The 129 chambers of commerce that have requested the maintenance of the dose to 2 grams per liter know well that this proportion is sufficient to guard the commercial and agricultural interests. The hygienists, on their side, do not ignore the fact that this is the maximum dose, and if it is surpassed it will certainly

injure public health. In conclusion, the academy gave it as its unanimous opinion that plastering wine was a custom detrimental to health, and petitions that the law of 1880 be rigorously enforced.—LIMOGES, FRANCE, *July 18, 1888.*

WALTER T. GRIFFIN,
Commercial Agent.

TRADE OF MONTE-CHRISTI.

[Transmitted by Consul Simpson.]

The town of Monte-Christi* was founded about three centuries ago, and was of some importance in the remote past, but from various inimical causes had dwindled into insignificance, when, in 1872, Mr. Juan Ysedro Jimenes, to whom its revival is directly due, established himself here. Prior to that date there was no business done here worth noting, but Mr. Jimenes soon commenced exporting mahogany, of which wood vast quantities were annually shipped hence until 1876, when the source of supply being practically exhausted the exportation of dye-woods was begun and still continues with activity.

In the opening months of 1885 the firm of J. Y. Jimenes & Co. successfully achieved, at a considerable cost, the realization of a feat of practical engineering which has proved of inestimable public benefit in many ways. Pursuant to plans drawn by Mr. P. Smith, an American engineer who supervised and carried the undertaking to a successful ending, a branch of the river Yague was caused, by means of a canal excavated at the proper point, to return to and flow through a former channel (from which it had been diverted by natural causes many years ago), discharging into the sea near Monte-Christi. By thus regulating and confining the course of this stream, hitherto dispersed in innumerable lesser water-ways and lagoons, large tracts of land formerly submerged have been drained. These lands are thickly covered with virgin forests of logwood of superior quality, which, before unapproachable, hence valueless, are now being felled and exported. The canalization of this branch of the great river of the Cibao has thus doubly benefited the dwellers in this region, affording unstinted water supply to the formerly waterless town of Monte-Christi, and imparting new vigor and prosperity to trade and to the community in general, by the redoubled activity in its chief staple of export.

Monte-Christi, at the present day, is a town of about 1,500 inhabitants, and its population continues to grow with its ever-increasing commercial importance.—Report of Mr. Grullon.—PUERTO PLATA, *July 17, 1888.*

*Monte-Christi is situated on the north side of the Island of San Domingo, about 60 miles west of Puerto Plata, and near the boundary line separating this Republic from that of Hayti. Weekly mail communication is maintained with this post by small coasting schooners, which make the trip in from eight to ten hours, and monthly by the Clyde line of steamers, which occupy about five hours in the passage. On rare occasions mails are sent by land, but as the country is very mountainous and roads bad this mode of communication is seldom resorted to.

THE COLLAPSE OF PAPER MONEY IN PERU.

In previous communications to the Department, and especially in my report for the year ending June 30, 1887, I have touched upon the important question of paper money in Peru. This matter has assumed a new, although not unexpected, aspect within the past week, and will be productive of such results in this Republic that it may be well to furnish the Department some detailed information on the subject. In 1878 the amount of paper money in circulation, amounting to some 20,000,000 sols, and issued by the different banks at Lima, was declared to be of Government responsibility, in consideration of the remission of certain credits held against the state by those institutions. At that time the sol in paper money was nearly equal in value to that in silver. A lack of confidence in the ability of the Government to redeem the notes; the further output of paper in consequence of the necessities of the nation during the war with Chili; the gradual disappearance of coined money, which was sent abroad in large quantities, and the calamitous termination of the war, brought the value of paper as a purchasing commodity down to one-twentieth of that of silver. Nevertheless, up to within a year the absence of other circulating mediums caused the paper to be retained in that character, although the fall in its exchangeable value had brought ruin to numbers of people whose means were represented by it. Further issues were still made by the Government, and a limited amount of the notes received in payment of customs was withdrawn from circulation and burned. First, a decided disinclination was manifested in commercial circles to receive the notes of larger denominations, and a fresh supply of smaller ones was issued in order to exchange those which were rejected; but the alarm spread, and has now reached such a degree that the paper money is virtually repudiated in all business transactions not directly connected with the Government. The treasury, obliged to protect, as far as possible, the money for which the state is responsible, receives it in payment of duties in a moiety with silver. Ten per cent. of the paper thus received is handed over to an official board for incineration; the notes which are seriously deteriorated are also delivered to this board in exchange for orders for dispatch on the custom-house, and the merchants of Lima and Callao offered to receive the paper at the rate of 25 sols for 1 in silver. This last agreement has not been carried out, and at the present moment the only employment to be given to the paper money is to pay it in part for duties. But this recourse is only open to merchants and importers; the people at large, who are all holders of the rejected currency, are those who suffer to an extreme. The Government pays out the paper to its enormous list of employés; and these, to provide for their necessities, are forced to convert their pay into silver at simply a ruinous discount. As a matter of

course, the limited revenue at the disposal of the Government, almost entirely derived from the duties paid into the custom-house, is most seriously affected by this change; but being destitute of funds to even gradually redeem the paper the burden has to be endured, and it falls on a multitude. It is estimated that there were 60,000,000 paper sols in circulation, or in private hands. This sum was equivalent to 2,000,000 silver sols, and, in the course of a week, has been rendered useless, and may be considered as practically lost. Such a blow to a nation in such financial straits as Peru is to-day is hardly conceivable abroad; but when the panic began, ten days since, there were numbers of families in this city and at Lima who were actually unable to buy food with the only medium in their possession—the paper money. In the interior from Lima, in the enormous Indian population of the departments of Huanuco and Iunin, there is no silver in circulation; paper is the only money known, and when the news reaches those districts of the crisis and rejection of the paper money at the metropolis and center of the Republic it is feared that the most unfortunate results will follow. To mitigate such danger, in a measure, the Government persuaded the owners of wheat and rice in the custom-house stores to dispatch those articles, and it is proposed to send the money thus acquired (130,000 silver sols) to the departments referred to, where it may be employed in purchasing the paper from its unfortunate holders.

It is generally considered that this abrupt blow will end the existence of all paper money in Peru issued by the state, or for which the Government may become responsible. It is even doubtful whether, after such a complete collapse in a commodity which was formerly held in high value for the guaranties it rested upon, and its convenience, even the issue of a first-class bank would be regarded here with favor. The amount of silver in circulation is very limited, and the banks and commercial houses of the two cities could not to-day produce 2,000,000 of sols; but, as the necessity is now arising, the silver bars will remain here, instead of being shipped to Liverpool and Hamburg, and the mint at Lima, a reduced replica of that at Philadelphia, will find lucrative employment.

The main points to which I venture to direct the attention of the Department are the following: The unprecedented and sudden disappearance from business transactions of a large amount of money guarantied by the government of the country where the rejection occurs, and the condition of the people who remain with 60,000,000 of that money in their possession, and which the great majority of them can not employ. This transformation was effected almost without disorder—only one instance occurring where the police were attacked in Lima and were obliged to fire upon the crowd, but fortunately without fatal result. I know of no other such collapse of the fiscal issue of a nation.—CALLAO, PERU, *December 21, 1887.*

H. M. BRENT,
Consul.

MINERAL PRODUCTS OF CHILI.

Products.	1876.	1878.	1880.	1882.	1884.	1885.
Sulphate of lime.....kilograms..	46,770	600	644,911	4,311,895	1,367,700	1,868,641
Copper—						
Bars .....do.....	41,766,155	40,894,645	35,542,351	36,726,110	35,890,024	36,071,412
Regulus.....do.....	14,632,593	11,750,779	9,382,618	12,263,810	9,946,975	3,476,580
Regulus and silver.....do.....	2,025,139	2,888,032	3,062,374	3,209,773	4,973,054	3,174,462
Ore.....do.....	3,931,048	1,411,098	3,932,999	3,031,109	5,576,545	1,577,096
Ore and silver.....do.....	54,581	268,921	184,722	161,361	387,250	551,388
Manganese ore.....do.....	.....	.....	.....	.....	4,324,007	8,160,215
Saltpeter.....do.....	.....	(?) 741,470	226,090,313	489,346,545	559,646,321	429,662,504
Iodine.....do.....	.....	.....	83,863	263,981	218,194	256,796
Gold.....grams.....	52,167	21,000	21,393	25,937	107,588	100,970
Silver.....do.....	34,799,737	41,148,400	84,284,115	96,631,703	66,465,597	155,616,593
Value.....	.....	.....	.....	.....	$46,434,284	$42,049,671

WASHING AND TREATMENT OF RAW WOOL.

The original quality of any wool may be altered beyond recognition by climatic influences; also, by carefully tending the sheep; but the general method adopted is the crossing of various breeds.

It is quite possible for the wool-grower of the present day to change a flock of sheep with long uncurled wool into a flock with short thickly-curled fleeces. So great a metamorphosis, however, can only be brought about gradually and during the course of several generations of sheep. Practically, a most extended use is made of this method of changing or improving the breed, and by means of it two principal species of wool may be grown totally differing from one another.

The variation in the character of the wool has resulted in a distinct and separate treatment and a particular manufacture being hit upon for each species, and, consequently, almost two different industries have been created, viz, the carded wool (woolen cloth) and the worsted or stuff manufactures. In the manufacture of woolen cloth, the short-curled carded wool which attains the greatest fineness of fiber is used, while for stuff manufacture long uncurled worsted wool is employed.

Raw wool, which is covered with grease, dirt, and all manner of filth to the extent of treble or four times its own weight, must undergo a thorough cleansing and scouring before it can be manufactured into cloth.

We may leave out of consideration the so-called fleece washing on the body of the sheep, by which only a small portion of the grease and dirt is removed. The actual operation of washing the raw wool is of the utmost importance, and upon its successful and thorough performance depends to a great extent the further suitableness of the wool for manufacturing purposes.

If we now inquire what are the conditions of a good and thorough wool washing, the answer will be, in addition to a perfect cleansing, it is of vital

necessity to preserve the staple, by which is meant to secure an even and parallel lying of the individual fibers.

It must be clear to every thinking man that the more entirely this natural position of the fibers is preserved and the less they are entangled the less will be the tearing in after manipulations and the finer and more equal will be the yarn. The above remarks apply with the same force to combing as to carding wool, although these different qualities are treated in washing on entirely different principles, as we shall see later on.

During the process of washing in warm soap-suds and of the subsequent rinsing in soap and warm water, it is absolutely necessary to remove as far as possible, through immediate oiling and stretching, the shrinkage of the combing wool and to reduce the curling of its individual fibers to the least possible minimum. The contrary is aimed at in the treatment of carding wool. In the latter case the chief care is not only to retain the intrinsic shrinking power, but to increase it by the washing and rinsing process, and to save in every direction the flexibility of the fiber which plays so integral a part in the fullery.

The shape of the fiber of unwashed wool is to some extent an unnatural one, accurate experiments having demonstrated that its natural curling power and, in consequence, the compact roundness of its form are to some extent hindered during growth. As soon as the fiber is freed from grease by washing, the wool falls back by its own elasticity to its natural shape, and becomes really more curly than when in the grease. This propensity is of great importance in carding wool, and the more carefully it is preserved during the preparatory treatment the greater are the shrinking faculty and pulling capacity. If we would now learn what are the means to be employed for satisfying all reasonable demands for a practical wool-washing process, special consideration must be paid to the washing ingredients used, the several manipulations customary, and the various kinds of machinery by which the old-fashioned hand labor has been supplanted.

WOOL WASHING IN THE PAST.

If we look back into the past history of the woolen manufacture and examine more particularly into the nature and fashion of the wool washing practiced by our forefathers, we find as early as 1774, in a scientific journal of that date, a detailed treatise on the importance of the washing and scouring of wool (Jacobson's Manufacture of Woolen Stuffs). Jacobson recommends above all a thorough washing of the raw wool in lukewarm water; for if, as he observes, the water be too warm the yolk will be scorched, while if it be too cold the yolk will not dissolve. At the same time he advises an addition of urine to the scouring bath, with the express statement that soap-suds might be substituted for urine. This manner of treatment, however, was not only more expensive and more cumbrous, but led to a considerable loss in the intrinsic softness of the wool. Jacobson further recommends the following method of testing whether the wool has been sufficiently scoured:

Some wool is taken from the urine bath and squeezed; if it swells out on the opened hand the wool is ready for the rinsing tub. Another periodical published about the same time as the above (1774), contains an article entitled "The Woolen Manufacture at Eupen," in which the application of urine in wool washing is mentioned as being in general use at that time.

A tendency soon manifested itself to improve a method of wool washing which must always have been distasteful, and the science of chemistry being still in its infancy the wildest and most absurd experiments were tried. Thus it inevitably came to pass that charlatanism found a wide field for the display of its ingenuity in this direction, and gave to the world a number of so-called washing surrogates, which, under bombastic and quack-suggesting names, hid such simple substances as soap-bark and soap-wort (*quillaya saponaria* and *gipsophila fastigiata*) mostly in the form of powder. A catalogue of these arcana of the wash-tub would take up too large a portion of our space and could serve no useful purpose in the present enlightened time.

The old method of scouring the wool with putrid urine had its undisputed merits, and the Schlieper process can alone be compared with it so far as preserving the softness of the wool is concerned. According to the Polytechnic Central Journal, of 1868, page 393, Schlieper uses a composition consisting of 20 parts of soda, 5 of oleine, and from 3 to 2 parts of of ammonium-chloride. The greater quantity of ammonium-chloride is to be employed when the fiber is fine, the less quantity, however, when the fiber is coarse. The peculiar effect of this compound consists in completely preserving the softness and flexibility of the fiber, at the same time removing all greasy substances, the latter result being attributable to the presence of the oleine and the ammonium-chloride. Ammonium-chloride and soda combine to form carbonate of ammonium and chloride of sodium, together with ordinary oil-soap, and a corresponding quantity of bicarbonate of soda. The bicarbonate removes the caustic effect from the soda, while the oleine promotes the formation of an emulsion with the grease of the wool. It had already been a fact of experience that a good result could be obtained by an addition of common salt to a solution of soda. Under this treatment the driest Cape wool and the greasiest wool alike became extremely clean and brilliant, and at the same time as soft and mellow as velvet. Without risking an exaggeration this method of scouring raw wool may be safely recommended. Of course this process of washing is always a very expensive one, and it has, in consequence, been abandoned in all-wool washing establishments which work for profit. In this case all other washing ingredients have given place to soda, by the careful use of which—more particularly of ammoniacal soda (solway soda), which has lately been manufactured by most superior processes—very satisfactory results are obtainable.

Singularly enough, Joclét, in his little work, "The Chemical Treatment of Sheep Wool," recommends caustic soda as being specially adaptable for scouring wool, owing to the more energetic effect of the hydrate on the grease. This is to some extent true, but the fact has long ago been proved

that carbonate of soda not only saponifies the yolk, but operates in a very destructive manner on the wool fiber. For this reason caustic soda must be regarded as the least satisfactory preparation for wool washing. Joclét adds, moreover, that competent professional experts have abandoned the use of caustic soda, because it gives to the wool a yellowish tint and deprives it of its flexibility and its so-called "grip," but he declares that the injurious effect of this agent can be neutralized by adding to it a solution of ammonia. As, however, ammonia, or rather in this case spirits of sal ammoniac, is likewise a caustic of kali, it is incomprehensible by what manner of means the caustic soda can thus be deprived of its destructive properties.

Grotte says on this subject: The qualities of soda used in wool scouring are by no means uniform in respect of pureness. Above all things, this soda must be free from any particle of caustic soda, because the latter has a decomposing influence on the fiber of the wool. Schapringer describes, in the "German Industrial Journal," for 1868, page 183, a process by which any caustic soda, casually present, is rendered harmless by being converted simultaneously into bicarbonate and sesquicarbonate of soda. To a bath containing 300 parts of water and 1 part of soda a quantity of sulphuric acid (ten-fold diluted), an equal to about 3 to 6 per cent. of the quantity of soda, is added. Carbonic acid is thus given, which rapidly forms an emulsion with the yolk, without in the least affecting the fiber.

Considerable saving of time and labor, however, is effected when it becomes unnecessary to resort to such means as above described, by using a soda entirely free from all caustics. Such a soda is the above-mentioned ammoniac soda, which may be considered an almost pure chemical product, as it contains from 98 to 99 per cent. carbonate of soda.

Equally important as the exact quantity and quality of soda used is the right temperature of the scouring bath. For the former no rules can be laid down, and in the case of the temperature it is just as impossible to give exact directions to meet all contingencies. Generally speaking, a heat of 40–50° R. is the average temperature necessary for a scouring bath, and as the difference between these two figures is considerable, it is obvious that the exact point can only be hit upon by practice. The same must be said of the length of time during which the wool must remain in the bath. In this respect the washer must be guided in a great measure by the quality of the wool to be washed.

When the scouring process, or the solution and saponification of the wool grease is accomplished, and the wool taken out of the scouring bath, it must thoroughly be rinsed. This is done in a bath of clear lukewarm soap-water in the case of combing wool, as we have already stated, while carding wool must be rinsed in cold river water. The low temperature of the rinsing water is here a matter of great importance, for it has been demonstrated by experience that washing of wool during the winter gives a far better result than washing during the summer. Joclét observes on this point: "No very clear explanation can be given for this generally-known principle, although

every expert washer will corroborate the fact that during the summer months a total elimination of grease by washing is impossible. It may be, however, that through immediate rinsing in ice-cold water the dissolved resin-like greasy substance quickly coagulates, and is thus more easily separated from the wool."

In connection with the above we must add that, although many woolen manufacturers are so comfortably situated as to be able to wash their wool supply during the winter and desist from summer washing altogether, such a plan can not be adopted as a rule, or be carried out under all circumstances. Washers and dyers are, by occupation, compelled to wash all the year round, even during the hottest season, whereby they run the risk of supplying wool which is not entirely free from grease. The most extraordinary tricks are then resorted to, with varying success, for obtaining a satisfactory result. For instance, when the temperature of the river or other rinsing water rises to 15° R. the calamity begins, for the well-scoured wool comes out of the rinsing machine in a sticky, muddy, and uncomely condition, and the higher the temperature of the water rises the greater is the resultant evil. In such a dilemma the following treatment has always been found successful: The temperature of the water in the scouring basin is raised to 50–54° R., and the bath itself is kept fairly "strong," only a very small portion of the wool, say a quarter of the quantity to be washed, being soaked in it. After five minutes, at the most, the wool is taken out of the bath and quickly rinsed under a very strong stream of cold water. To put the matter in a nutshell we may say that the following points should be paid attention to in the hot season: High temperature, a strong bath, short soaking of small quantities of wool, and quick rinsing in plenty of water. Forced as this treatment of the wool may appear, its results have never been bad. The wool always dyes well without losing its color, the whole dyeing process remaining unaffected and satisfactory.

Having fully discussed the subject of wool-scouring and washing ingredients, we may consider now more closely the mechanical arrangements which are employed in wool scouring.

From the primitive process of washing by hand, which is still in vogue in minor business establishments, to the "Leviathan," the most complete washing-machine of the present time, is a mighty step, and yet the progress which these two extremes represent has been the work of a comparatively short space of time. The first experiments in the construction of wool-washing machinery date back to the last century, but were more or less ineffectual until 1830, when the epoch-making inventions in this sphere of industry commenced.

The first really useful washing and scouring machine, of which an idea may be gained from the diagram (Fig. 1) below, was constructed in 1832 by Sehlmacher. In this invention the rinsing-rake, which was formerly operated by hand, was set in motion by a crank, while the rinsing itself was carried on in a wash house, and no longer required to be done in the river. The

water necessary was conducted through pipes into the rinsing or scouring machine, out of which it runs, after being used, without any assistance.

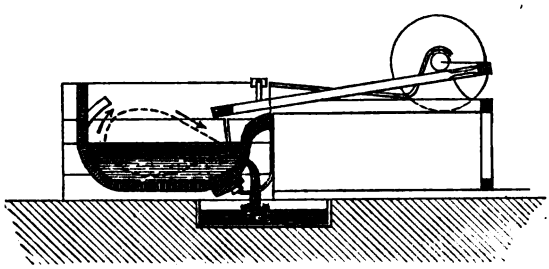


Fig. 1.

A much more perfect washing-machine was built by Peltzer about the year 1855 (see Figs. 2 and 3). On the top of an elliptically-shaped vessel are two paddle-wheels with curved hooks, by which the wool, rotating with the water around the axis of the machine, is submered. There are many modifications of the original idea. One inventor makes use of flying pinions, another of rakes, a third of paddle-wheels on one side and rakes on the other, etc., each claiming special advantages for his construction.

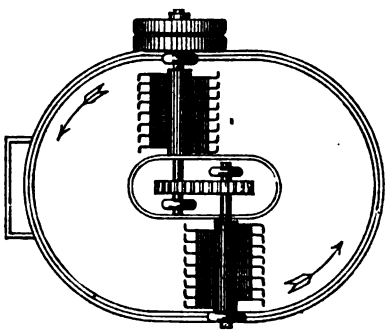


Fig. 2.

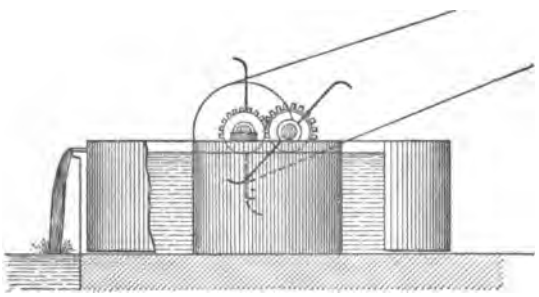


Fig. 3.

Herr Löbner, in Dahlhausen, near Lennep, has adopted the following method: He avails himself of the water supply as a motor, so that a single

flying wheel is sufficient. For this purpose he lets the supply-pipe enter the side wall of the washing-machine about 8 inches above the bottom of the vessel, just opposite the flying wheel, as may be seen in the sketch below (Fig. 4). The stronger the supply of water the greater is the water pressure from the reservoir, and consequently the more effective is the rotation of the water in the washing-machine. Thus not only considerable power is saved, but the wool is only treated by one flyer and the current of the water, and a superior mellowness in the wool is obtained.

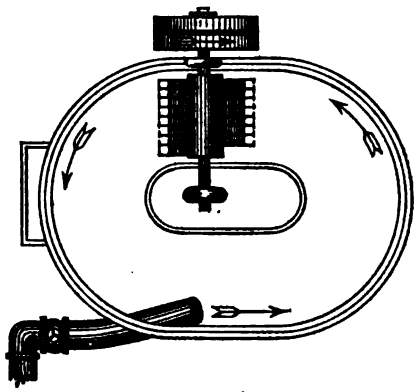


Fig. 4.

Even the long-fibered Buenos Ayres wool does not become entangled, though formerly it happened only too often that long wool twisted into lengthy braids. The system may not be applicable in every case, but it will answer very well where the water runs into the waste basin at considerable pressure. The stronger the rush of water the less wool needs to be turned in the washing-machine, and the less danger there is of the individual fibers becoming twisted and entangled.

Since the scouring of so-called smut-wool (wool not washed on the body of the sheep before shearing) has been commenced, the whole method of wool washing has had to be changed. In most cases the ends of the fibers in the unwashed state are covered with grease and dirt to such a degree that a mere soaking of the wool in wash-lye is not sufficient to dissolve the same. To accomplish this a procedure has been devised by which the soaked wool passes between solid rollers, which are pressed together by strong springs or levers, before it goes into the rinsing-machine.

Although good progress had been made in loosening the greasy staple through this squeezing process, which is still resorted to in small woolen mills, many improvements had to be introduced before the desired result was gained. A repeated soaking in fresh water and a second pressing between the rollers produced a more favorable result, so that by degrees the present "Leviathan" machine, a combination of soaking vessels and squeezing contrivances, was arrived at (see Fig. 5).

The construction of the "Leviathan" and its treatment of wool is as follows: The first square soaking vessel receives the raw wool, which remains a greater or less time, according to its quality in warm water or weak lye. After the wool has soaked long enough the spreader or elevator is set in motion, raising the wool on the first endless lath-table, which conveys it to the first pair of rollers. Immediately behind this pair of rollers is the second soaking basin, into which the squeezed wool falls, and having gone through a second washing is carried, by means of iron hooks, through the washing bath to the front part of the basin. Here the second elevator is waiting for the wool, which it carries through the second pair of rollers into the third basin filled with a fresh lye-bath. In the same manner the wool passes through a third and, in some cases, a fourth basin, till it is finally freed entirely from all greasy and sticky substances and is ready for the rinsing-machine, in which the adhering lye and soap-suds are washed off with cold or warm water, according as the wool is of short or long staple.

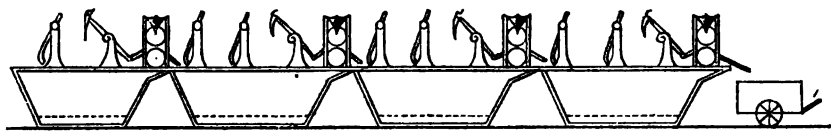


Fig. 5.

The three-basin system is the one most generally employed and is sufficient for all practical purposes. Leviathans, however, with two and even four basins, are also employed. The strength and method of preparing the scouring lye depends entirely on the nature of the wool. It is quite impossible to conduct the washing of the wool on any fixed plan or system. Favorable results can only be obtained by practical experience. Buenos Ayres wool, for instance, is generally treated with a bath of the following compounds: In the first basin the wool is soaked in lukewarm water without any washing ingredients, on account of the fact that all wool sheared in the grease contains, as a rule, potash enough to saponify the greatest portion of the animal grease. In the second, third, and, eventually, fourth basins soda, urine, or soap is added in such quantities as may be required by the character of the wool, in order that it may be freed from the last remnant of grease and dirt in passing through the rollers.

The real inventor of this automatic washing-machine and its systematic combination we must undoubtedly consider Eugène Mélen, of Verviers, who took out a patent for the first "Leviathan" on the 14th day of April, 1863. In the course of time the original motory mechanism has undergone various modifications and improvements, the principal aim always kept in view being to save as much as possible the staple of the wool. Owing to the quiet and steady motion of the hooks and rakes which carry the wool through the bath an entanglement of the fibers is not easily caused. The elevator, however (Fig. 6), which conveys the wool from one basin to the other is still a considerable source of danger.

When the wool, which is passed through the basin as slowly as possible, reaches the elevator, it is suddenly jerked out of the water by the ladles of the latter. A part of the wool thus caught up often slides down again from the ladles into the whirlpool, which their violent motion causes to be again seized and drawn out upon the endless latticed conductor. As this lifting out and sliding back again of the wool repeats itself more or less frequently, the danger of twisting and knotting is very great. To obviate this whirlpool caused in the washing fluid, and the falling back of the wool from the elevator, the most varied means have been assayed. The best system was that displayed in the operation by Messrs. F. & N. McNaughten, of Rochdale, in their "Leviathan," exhibited at the International Wool Exhibition in London in 1881.

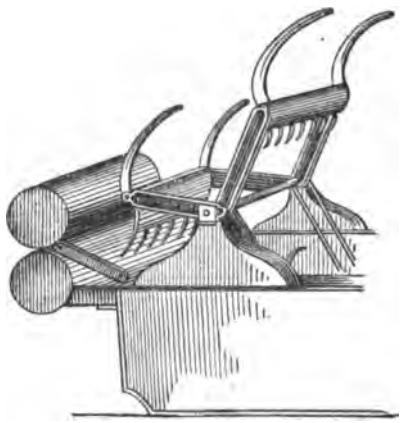


Fig. 6.

The form and arrangement of this "Leviathan" were the generally known ones; new and peculiar, however, was the lifting apparatus (see Fig. 7), which was constructed as follows: Over an obliquely-lying polished glass plate G, reaching from the sieve-bottom of the basin to the rollers and falling off in an obtuse angle towards the same, were two rake-shaped frames A and B, the single shafts of which were placed side by side in alternate order. These shafts were provided with metal prongs which reached almost to the glass plate, and were united by short connecting rods with the diagonal rods *p* and *q*, which, in their turn connected upright, placed side by side with sliding pieces S S′ arranged further below under the glass plate. The latter lay close to the eccentric rods *e e′*, in alternate order, and were raised and lowered by the latter and by the rake-shaped frames. The eccentric rods were placed upon symetrically turning shafts. The sliding pieces S S′ were connected by means of guiding rods I I with the oscillating lever H, so that the latter, together with the frame, preserved an oscillating motion.

The shape of the eccentric rods kept the frames, by means of close and half-rotation alike, in the lowest and the highest position, while the taking off and letting down were quickly performed.

When the frame was in its lowest position the wool was shifted upwards along the glass plate; in their highest position the frames moved out downwards far below the plate. The effect is therefore easily understood. The last rake conveyed the wool towards the frames, the sinking frame pierced the wool with its prongs and (in the lowest position) forced it along the glass plate in an upward direction, and while throwing off the wool the other frame returned in the meanwhile to commence the same operation over again. At the upper end of the glass plate G the wool was thrown over the edge and fell along the second glass plate G, towards the squeezing cylinders, whence the wool was either carried into a second basin or thrown by a flap-roller from the lower press cylinder to accumulate on the floor.

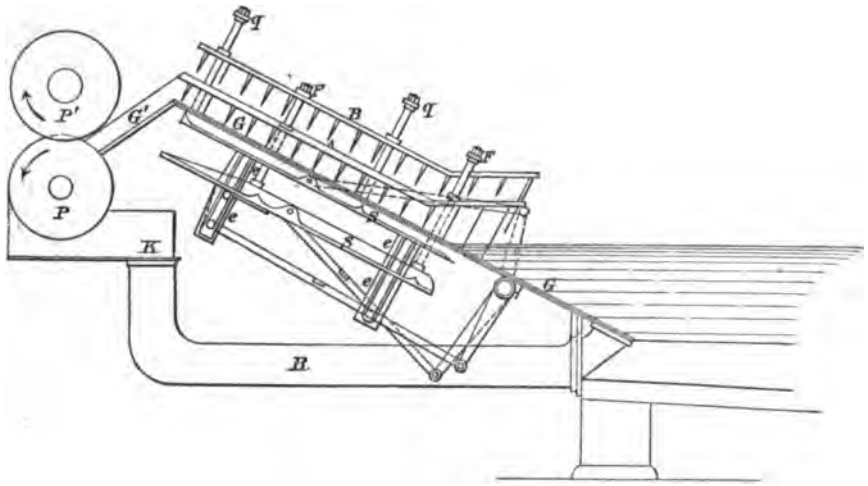


Fig. 7.

The working of this machine was very exact, the velocity of the rollers as also of the frames and rakes being moderate, a favorable augury for the preservation of the staple. By the use of the glass plate all friction in lifting out and, consequently, the knotting of the wool were avoided, and the wool came light and open to the press-cylinder. The lifting apparatus was simply contrived and worked well.

In the "Leviathan," so far as it is adaptable for scouring purposes, we have an almost perfect washing-machine. In connection with the "Leviathan" a cold-water rinsing-machine is often seen, the motory mechanism of which is similar to that of the scouring basin, only that the velocity is much greater. While, as before stated, the whole scouring process is performed with a certain easiness and tranquility, and the carrying forward of the wool takes place with the utmost precaution and care to prevent the slightest entanglement of the staple, in this rinsing apparatus a kicking and shaking movement becomes noticeable, which would seem designed to spoil in a moment what had been so carefully preserved and saved. In order to free the wool from all adhering lye and soap-suds, it is forced by the pressure of the water-supply for five,

ten, and often more minutes in the direction indicated by arrows in Fig. 8, and is submitted to continual tearing and entanglement until the elevator is finally inserted to haul out the perfectly rinsed wool. Now, however, the damage to the wool begins in real earnest. A general obstruction commences—the elevator once set in motion, having stopped the circular motion of the wool, the rakes work briskly ahead and entangle everything which is reached by the iron hooks. The idea of a uniform and steadily-working machine may have been the prevailing one, but unfortunately the work accomplished falls far behind what was expected of it.

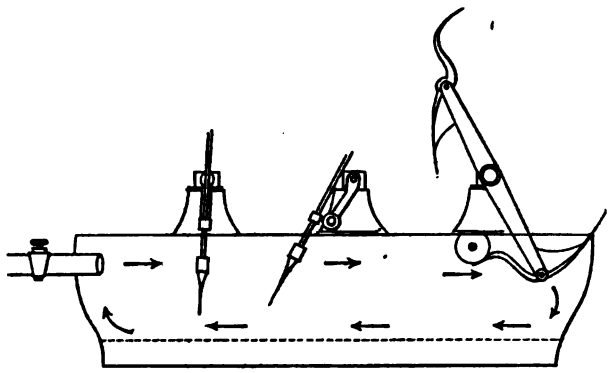
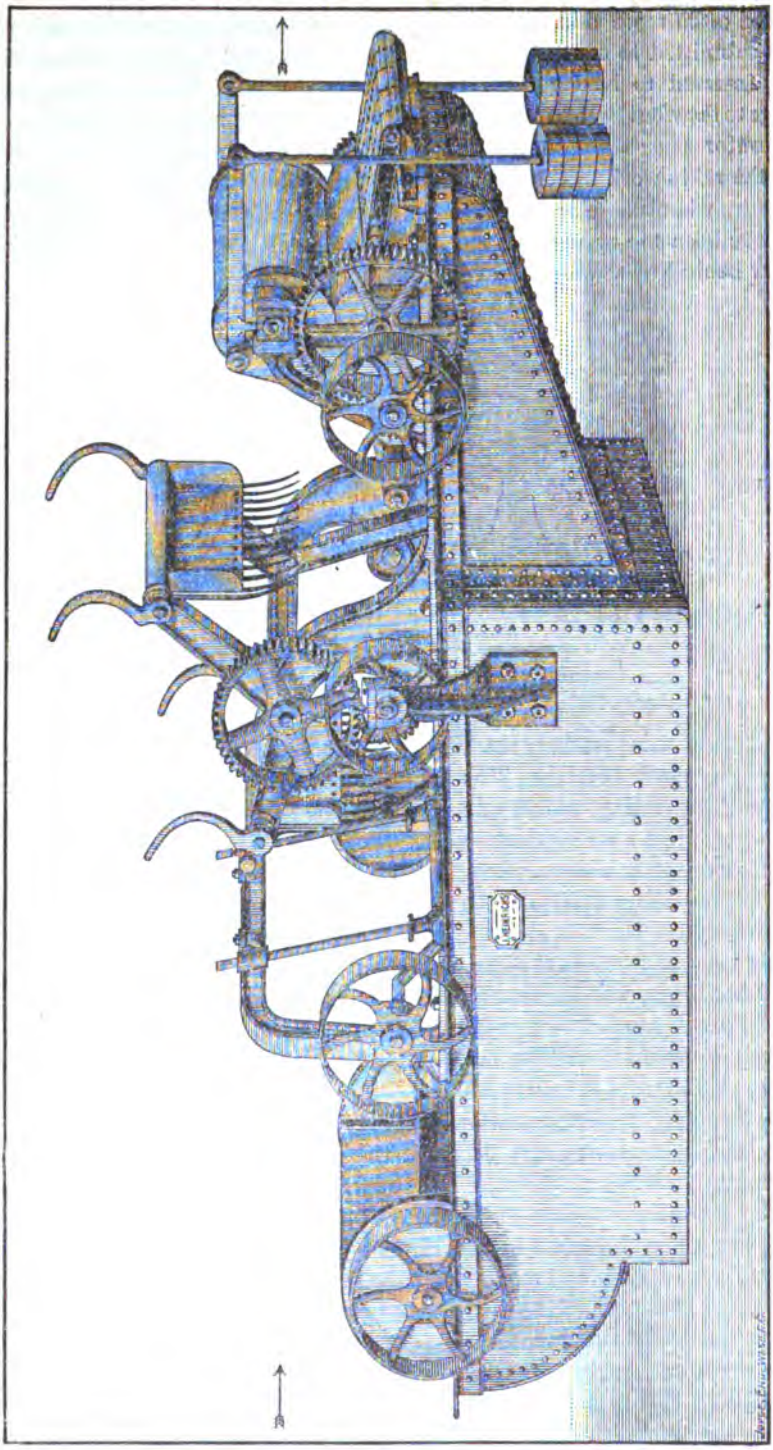


Fig. 8.

Intelligent wool washers readily appreciate the clear mistake, and while they employ the "Leviathan" as a superior scouring-machine they use the "Peltzer" for rinsing, which, on account of the arrangement of its motory mechanism, gives a far superior result. That the "Leviathan," as such, is susceptible of many improvements is a question which need not be discussed. The present rinsing system is the first to require improvement. The mere conveying of the wool, at an average temperature of 40 to 45° R., from the scouring bath into very cold water, necessarily occasions a sudden contraction of the wool fibers, whereby entanglement and filtering easily ensue. When, however, in addition, a violent motion is produced by mechanical means in eliptically-constructed rinsing-machines, a greater or less entanglement and knotting of the wool is unavoidable.

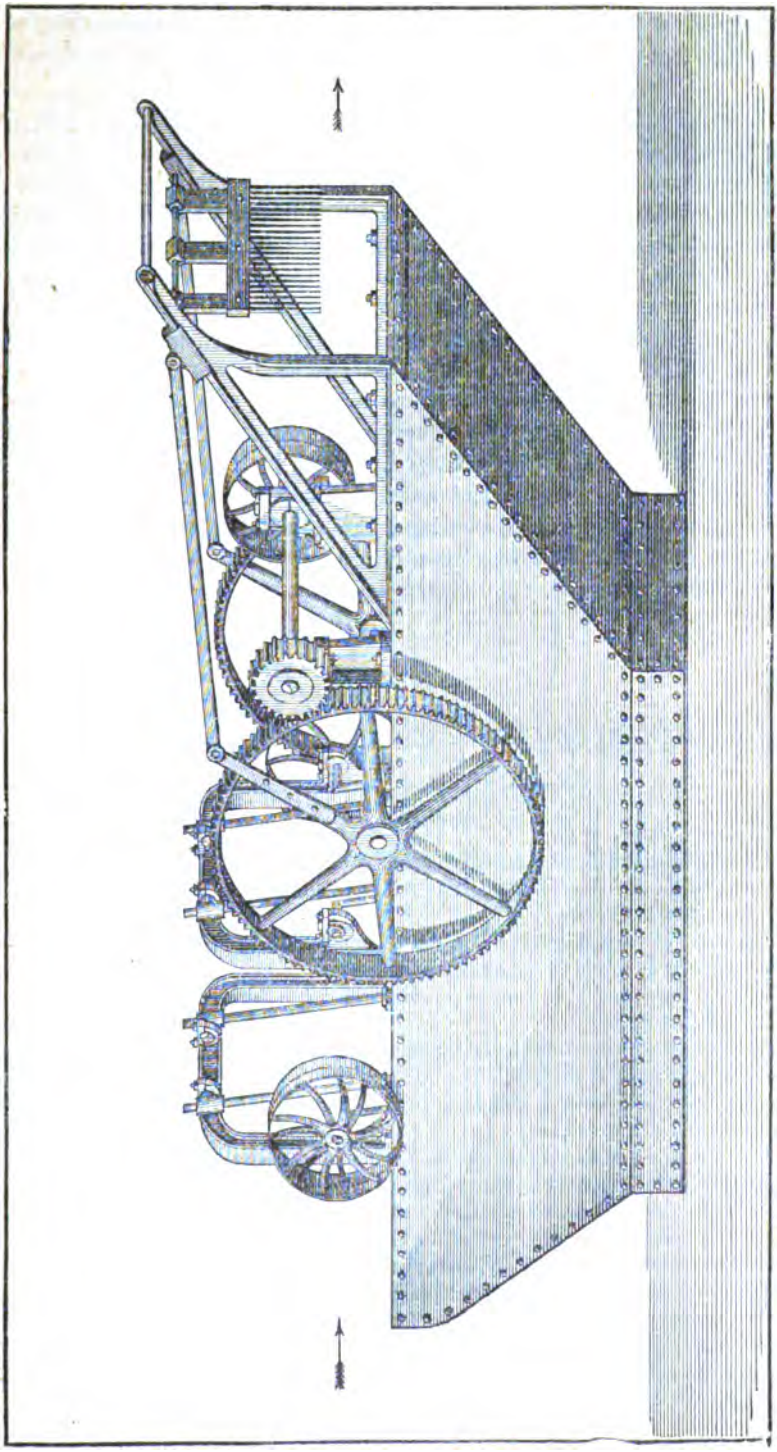
The one-flyer system, mentioned above, already supplies a substantial remedy, and it may be safely accepted that the result would be far more satisfactory if a sufficiently strong current without mechanical aid could be applied. Before concluding these remarks on wool washing it must be mentioned that all experiments in the direction of scouring wool with easily-volatile, grease-dissolving compounds have ended in practical failure.

As the industry progressed it became necessary to ascertain, in the sanitary interests of the community, how it could be made possible to purify the waste water resulting from the washing and rinsing processes from noxious impurities, so that it might be allowed to run off into adjoining canals and



BAC DE LÉVIATHAN, 2 OU 3 BACS FORMENT UN LÉVIATHAN.

La laine passe mécaniquement d'un bac au suivant. Grandeur suivant quantité de laines à laver. — Atelier de construction de **Jos. Heinrichs, Hodimont-Verviers.**



RINCEUSE DE LAINE FAISANT SUITE AU LÉVIATHAN.

La laine sort de ce bac mécaniquement. Se construit également de plusieurs grandeurs et systèmes. — Atelier de construction de Jos. Heinrichs, Hodimont-Verviers.

rivers. In some cases industrial establishments have been compelled, by protests raised in the neighborhood or by official acts, to cleanse their waste water.

In consequence of this, the manufacturers developed the idea, not only of rendering their waste water conformable to sanitary conditions, but of converting it into a source of profit. In many industrial establishments considerable profit is derived from the wool scourings. After a certain quantity of wool has been scoured and rinsed, the remaining hot and cold water, which contains potash, grease, and soap-suds, is run off into a large, water-tight vessel placed outside the wash-room; lime-water and sulphate of lime are added, whereby soap of lime and ferrous soap are formed and sink to the bottom of the basin. After standing twelve hours the water appears at the top perfectly clear and free of all noxious substances, and can safely be run off into the neighboring streams. The greasy substances left in the vessel are formed into cakes in filter-presses and dried by a mechanical process. By the application of benzine and acids the soap is freed from the lime, ferrous compounds, while the remaining grease is utilized in the manufacture of wool-wax, stearine, paraffine, oleine, degras (oil used in tanneries for chamoising), illuminating gas, etc.—BARMEN, *July 7, 1888.*

JOSEPH FALKENBACH,
Consul.

SEVENTH INTERNATIONAL CONGRESS OF AMERICANISTS.

[Transmitted by Consul-General Raine—translation.]

PROGRAM.

By a resolution of the International Congress of Americanists, held at Turin, Italy, September, 1886, Berlin was selected as the place of the seventh meeting, which is to take place from October 2 to 5 in this city.

It is the object of the International Congress of Americanists to contribute to the progress of scientific studies in relation to America, specially to the times anterior to Christopher Columbus; its chief purpose is to promote personal intercourse between scientists who make such study a special object.

Membership is allowed to all who take an interest in the progress of this study by an annual fee of 10 marks (about $2.38) per annum.

The receipt of the treasurer is considered as a card of membership, entitling such member to the publications of the congress.

Gentlemen who desire to participate in the Congress are requested to forward the amount as soon as possible to the treasurer, Consul-General W. Schinlauk, No. 71 Köpnicker street.

For each discourse only twenty minutes are allowed. Discourses requiring more time for delivery can be published in the reports of the Congress. It is requested to limit discourses during the meetings to a brief summary, stating contents and object of same.

Discourses or treatises of members not present, which would come within the reach of these rules, should be accompanied by a brief abstract of contents, facilitating its reading before the congress.

Discourses of such gentlemen who cannot attend the meeting personally should be forwarded before September 15. Gentlemen who intend to make addresses are requested to

notify the secretary-general by the 15th of September, so that proper notice of their intention can be published in the program of the meetings. Lecturers are earnestly desired not to read their discourses, but state orally and briefly their contents.

Books, manuscripts, and other objects dedicated to the Congress become the property of scientific institutions in Berlin; the final decision regarding the distribution of such presents among the institutions is subject to the decision of the committee of organization after the adjournment of the meetings.

In agreement with the board of managers of the Turin meetings the committee of organization proposes the following subjects for discussion:

Geography, history, and geology.

1. Regarding the name, "America." Reporter, Mr. Cora.

2. Latest discoveries about Christopher Columbus; his life and his voyages. Reporter, Mr. Geleich.

3. Books, pamphlets, and drawings in relation to Christopher Columbus and his time, on the occasion of the 400th anniversary of the discovery of America. Reporter, Mr Cora.

4. Voyages to the New World in the beginning of the sixteenth century, particularly those of the French. Reporter, Mr. Gaffarel.

5. Who were the peoples who inhabited Central America prior to the immigration of the Aztecs and other Northern tribes, and how arose the Mexican Empire?

6. The position of the Huarteks and their relations toward the history of Mexico. Reporter, Mr. Seler.

7. Periodical order of the invasions of the barbarians into the old Mexican Empire.

8. Prehistoric history and migrations of the Chibchas. Reporter, Mr. Uhle.

Archæology.

9. Do architecture and ante-facts of the pre-Columbian America, particularly stone (*zadelte*) and clay implements and vessels, give any proof of a direct connection of the Old with the New World at that time?

10. Antiquities from the State of Vera Cruz (Mexico). Reporter, Mr. Stübel.

11. Are the antiquities found lately in Costa Rica entitled to the supposition that they come from a civilized people who, at the time of conquest, were already extinct? Reporters, Messers. Polakowsky and Peralta.

12. Religious and symbolic meaning of the different idols, statuettes, and figures found in Peruvian graves; classification of the Canopes according to the different types.

13. About the use of forms in producing clay vessels in Mexico and Peru. Reporter, Mr. Reis.

14. Mode of production and ornamentation of textiles in pre-Columbian America. Reporter, Mr. Stübel.

15. Order of age of the Peruvian architectural monuments.

16. The kitchen-offals (*sausbaquis*) in Brazil. Reporter, Mr. G. H. Müller

Anthropology and ethnography.

17. The doctrine of the geographical provinces in its significance for the ethnology of the American continent. Reporter, Mr. Bastian.

18. List of the peoples and tribes of America prior to the discovery and conquest of America; ethnographical map of North and South America.

19. Anthropological classification of the wild tribes of the pre-Columbian and present America; craniological atlas. Reporter, Mr. Virchow.

20. The question relating to the unity or plurality of the American aborigines viewed from the examination of their hair. Reporter, Mr. Fritsch.

21. Can it be asserted from the present standpoint of craniology that the American race has inhabited America since the deluge, and that the shape of the skull of the old inhabitants corresponds with the skull of the present Indians? Reporter, Mr. Cora.

22. Have we any right to assert that all the varieties of the American race have their origin in America and that they have undergone no essential change in consequence of foreign influences? Reporter, Mr. Cora.

23. About the artificial deformation of the skull of the old Indian tribes as compared with deformations customary with the peoples of Europe, Asia, and the South Sea. Reporter, Mr. Virchow.

24. Do we find among the Indian tribes of the Northwest of America peculiarities which indicate near relations to Asiatic tribes? Reporter, Mr. Aurel Krause.

25. Anthropology of the inhabitants of Old America at the time of Cortez. Reporter, Mr. Hartmann.

26. Right and customs in Old Mexico. Mr. Grossi.

27. Anthropology and human sacrifices in pre-Columbian America. Mr. Grossi.

28. Cremation of the dead prior to and after the discovery of America. Reporter, Mr. Grossi.

29. Domestic animal races in Old Peru. Reporter, Mr. Vehring.

30. The plants in use with the old Peruvians. Reporter, Mr. Wittmack.

Linguistics and palæography.

31. The chief linguistic families on the Amazonas and on the Orinoco. Reporter, Mr. Adam.

32. Linguistics of the tribes of the central part of South America. Reporter, Mr. Von den Steinen.

33. Distinctions in the nature and form between the languages spoken on the coast and the highlands of Peru; close relation of the first to the languages of Central America.

34. Do Quichua and Aymara belong to the same family of languages? Reporter, Mr. Steinthal.

35. Can you discern in the idioms of the west coast of America a grammatical relationship to the languages of Polynesia? Reporter, Mr. Steinthal.

36. Is the syntax with intercalation and the embodying of the personal pronoun or of the regimen a peculiarity of most of the American languages?

37. Does a resemblance exist between the Chinese and Toltec written characters? Reporter, Mr. Charnay.

The first day of the Congress will be devoted to the discovery of the New World, the pre-Columbian America, and to the geology of America; the second day to archæology; the third day to anthropology and ethnography; the fourth, to linguistics and palæography.

Beginning September 29, the office of the Congress will be at the Museum für Völkerkunde, No. 120 Königgraetzer street, Berlin.

All communications relating to the Congress must be addressed to Dr. Hellmann, secretary-general of the committee of organization, No. 120 Königgraetzer street, Berlin.

The honorary president is Dr. Von Gossler, minister of clerical and educational affairs, etc.

Messrs. H. R. Merton & Co.'s circular gives the stocks (in tons) of copper afloat for, advised by mail, and in store at Liverpool, Swansea, London, and Havre, and the prices per ton of Chili bars, as follows:

End of—	Stocks.				Deliveries, France and England.			Prices.			
	1888.	1887.	1886.	1885.	1888.	1887.	1886.	1888.	1887.	1886.	1885.
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*				
January	45,692	61,375	58,589	51,364	5,928	8,520	7,498	£77⅛	£38⅞	£40	£47¾
February	52,593	59,546	58,621	52,369	4,616	7,054	7,137	78⅞	39⅜	41	47¾
March	58,747	57,023	58,499	52,456	5,489	7,900	8,608	80½	39⅜	41½	45¾
April	64,349	56,172	61,069	54,384	5,877	6,304	7,090	80⅜	39⅝	41⅜	43¾
May	69,487	54,770	60,485	53,478	6,044	10,065	7,215	80¾	39¼	39½	45⅛
June	72,243	51,972	61,550	54,137	6,212	10,692	7,768	81	40	39⅝	44½
July	75,412	52,256	62,247	53,723	9,766	7,515	8,097	80½	40	38⅞	43½
August	.....	51,206	66,111	55,389	.....	8,858	5,616	.....	40⅛	39⅜	42⅜
September	.....	49,176	64,826	57,165	.....	7,962	8,684	.....	39¾	41⅛	40¾
October	.....	48,503	62,827	56,547	.....	11,320	6,999	.....	44¼	40⅜	39½
November	.....	45,121	62,780	53,984	.....	13,216	7,950	.....	66¾	39¼	42¾
December	.....	42,301	63,290	57,070	.....	12,087	5,345	.....	85	38½	41
Year	.....	.....	.....	.....	.....	111,493	88,017	.....	.....	.....	.....

COMMERCIAL EMBARGO BETWEEN FRANCE AND ITALY.

It is now nearly five months since the definite rupture of friendly commercial relations between France and Italy, and the situation which has resulted in both countries from the special and retaliatory tariffs which took effect March 1, last, offers an interesting study to the student of international commerce and tariff legislation.

The circumstances which led to the present strained and unfortunate state of affairs were, briefly, as follows: On November 3, 1881, a commercial treaty between France and Italy was adopted, to take effect February 9, 1882, and continue ten years, unless denounced by one or both of the two contracting parties prior to January 1, 1887, in which event it could be abolished on January 1, 1888. The treaty had, therefore, five secure years of life, and in the worst event one year more was vouchsafed, during which the people of both countries might prepare for the final rupture, or for such new conditions as might meanwhile be agreed upon.

Under this treaty the wines of Italy were admitted to France on payment of the nominal import duty of 2 francs per hectoliter (less than 1½ cents per gallon), and those of France, being uniformly of higher quality, bore a proportionate duty when imported to Italy of 3 francs per hectoliter. This was a concession on both sides—the general import duty on wines imported both to France and Italy from countries having no special treaty being 4.50 francs per hectoliter. The treaty of 1881 made other special and mutual concessions—particularly concerning port dues and other details relating to maritime intercourse, coasting, and fishery privileges—between the two nations. The five years succeeding the winter of 1882 witnessed the development of a heavy and prosperous trade. Italian vessels swarmed in

the French Mediterranean ports, French steamers from Marseilles to North and South America touched at Genoa, Naples, and Palermo for freight and passengers, and the common, cheap wines of Italy were poured into France by shiploads to supply the deficit caused by the ravages of the phylloxera in the vineyards of this country.

Italian wines are largely of so low a quality, and withal so unskillfully made that, with the exception of the Chianti and a few other brands, chiefly from Tuscany, they were rarely exported and had only a limited value for local consumption until the necessities of France and the Franco-Italian treaty of 1881 opened to them a large and profitable market for the purposes of "coupage," or mixture, with the richer but waning vintages of Provence and Languedoc. Under the stimulus of this new demand the product of Italian wines developed rapidly, reaching, in 1886, the unprecedented total of 35,564,000 hectoliters, of which 8,136,000 hectoliters were grown in Sicily. But from 1883 to 1885 certain adverse influences began to interfere. The St. Gothard Railway was opened and Genoa began to attract a valuable shipping trade with Switzerland and southern Germany, which had been previously monopolized by Marseilles. France, by a bold and clever movement, had established a protectorate over Tunis, close to the shores of Sicily, thereby grasping privileges which Italy insisted should have fallen to her share. German diplomacy saw its opportunity, and by a policy, which is part of the well-known political record of that period, cemented the central European alliance and helped to turn the sympathies of Italy northward and against France. Without going more fully into causes, it may be broadly stated that, as a result of this constantly increasing friction, both parties to the treaty of 1881 grew dissatisfied and gave mutual notice that they would demand a revision before January 1, 1888.

Then ensued a long and fruitless series of negotiations. Commissions were appointed by the French and Italian governments to prepare a new treaty of commerce; but after months of labor and disputes they were unable to agree, and the treaty of 1881, having been provisionally extended two months beyond the beginning of the present year, was permitted to lapse on the last day of February, and was replaced by special tariffs enacted by each government in a more or less retaliatory spirit and regulating all imports from the territory of the other power.

It is asserted — with what justice it is not within the province of this report to inquire — that the responsibility for this rupture of amicable commercial relations was mainly the work of Italy, which was not only the first to denounce the existing treaty, but throughout the subsequent negotiations imposed — as the French press continued to assert — arbitrary and impracticable conditions. However this may have been, the special tariffs enacted by each government to govern its commerce with the other are nearly identical in letter and spirit.

Each imposes a duty of 20 francs per hectoliter on wines imported in casks and 60 francs per hundred on wines in bottles. This was an increase

of 1,000 per cent., and the new rate was, of course, absolutely prohibitory. In whole categories of other classified merchandise the special schedules on both sides increased by 50 or 100 per cent. the duties imposed by the general tariffs of either government upon such goods when imported from another country with which no special treaty existed. In brief, these special tariffs, enacted to replace the lapsed treaty of 1881, are distinctly retaliatory measures, each intended to restrict and injure, as far as possible, the commerce of the other nation. Their effect has been precisely what might have been foreseen. Both countries are suffering from the congestion in their trade, thus artificially produced, and the commercial and agricultural classes, particularly in Italy, are weary of the strife, and hoping eagerly that some compromise may yet be reached which will restore the former freedom of commerce.

Thus far the effects of the blockade seem to have fallen more severely upon Italy than France. In the former country there is a dearth of capital which paralyzes commercial enterprise, and the farmers are, in general, poorer and more dependent than the French upon the immediate sale of each year's vintage. Their wines, as already stated, are of lower quality, and when exported are valuable mainly for mixture with foreign wines. In southern Italy the distress is already acute. Money is so scarce as to be almost unobtainable by people of moderate means, and many peasant proprietors with mortgages on their property have been forced to make ruinous sacrifices. The market values of ordinary wines have fallen as low as 4, 8, and 10 cents per gallon, and all collateral interests, including coopérage and the traffic in staves, are correspondingly depressed. The crisis was precipitated at a time when native ordinary wines were abundant and cheap in France, not so much by reason of a profuse vintage last year — as because the working classes have learned to consume the "piquettes" or artificial wines made from dried grapes imported from the Levant. As the wine export to Italy had been previously confined mainly to champagne, Burgundy, and Bordeaux wines of high quality, the blockade has not sensibly affected the French wine growers or dealers. France has a steady and well-established export demand for her wines, which Italy has not; but if the present restrictions are to be permanently maintained no one can doubt that the Italians, by perfecting their processes of manufacture, will eventually produce in large quantities wines which will bear exportation, and seriously encroach upon a trade with Russia, England, the Netherlands, and the United States, over which France has hitherto held entire control.

But in order to realize the full effect of this war of prohibitory tariffs it is requisite to consider the aggregate traffic, the whole list of raw and manufactured products which the natural laws of trade would bring into exchange between the two countries. From the returns of 1886 — the last year of which the complete statistics are accessible — it appears that France imported from Italy —

		Francs.
Wines	valued at	89,680,722
Cocoons and silk products	do	84,789,604
Olive oil	do	17,415,068
Domestic animals	do	20,558,866
Fresh fruits	do	6,570,988
Other products	do	90,307,794
Total		309,323,042

On the other hand Italy imported from France during the same year—

		Francs.
Silk goods	valued at	57,000,000
Woolen goods	do	24,475,000
Wines, skins, tools, clothing, jewelry, paper, etc	do	110,982,098
Total		192,457,098

These figures may not seem large to Americans—accustomed to the colossal statistics of commerce in our own country—but they represent a trade so vital to the prosperity of these two countries that the statesmen on either side of this international dispute believed that the other could not endure a blockade, and would be forced to surrender as soon as the strictures of the special tariffs became operative. Thus far such expectation has not been realized. Each side is waiting for the other to yield, but, so far as can be seen, the end is still distant and uncertain.—MARSEILLES, *July 24, 1888.*

FRANK H. MASON,
Consul.

EXPORTS OF HENNEQUEN FROM PROGRESO, YUCATAN.

Year.	Total export.	Value.	Exported to New York.	Exported to Great Britain.
	Bales.	*Piasters.*	*Bales.*	*Bales.*
1880	97,357	1,805,848	83,984	7,212
1881	139,433	2,726,567	112,048	18,511
1882	135,083	2,739,556	95,048	15,160
1883	178,976	3,537,507	139,215	14,150
1884	233,311	3,471,647	187,978	20,833
1885	244,746	3,334,812	211,004	14,076
1886	228,387	3,029,727	197,704	14,601
1887	219,105	5,894,420	201,969	9,491

INDIAN COTTON GOODS.

Commenting upon the growth of India's trade in cotton goods, the Times, of India, writes:

Previous to 1878–'79 no attempt was made to ascertain the total annual consumption of cotton by the Indian mills, but in that year the Bombay Mill Owners' Association compiled a table, and each autumn they issue it, giving the information to June 30. Taking the official figures to March 31 of the exports, and the mill returns of the consumption, and reducing both to bales of 3½ cwts., we annex a comparative statement:

Exports and mill consumption of Indian cotton in bales of 3½ cwts. (392 pounds).

Year.	Exports.	Mill consumption.	Total exports and consumption.	Percentage of mill consumption.
1887–'88	1,536,000	*815,000	*2,351,000	*34.6
1886–'87	1,552,000	726,000	2,278,000	31.8
1885–'86	1,197,000	643,000	1,840,000	34.9
1884–'85	1,447,000	597,000	2,044,000	29.2
1883–'84	1,705,000	531,000	2,236,000	23.7
1882–'83	1,762,000	457,000	2,219,000	20.6
1881–'82	1,608,000	398,000	2,006,000	19.8
1880–'81	1,298,000	379,000	1,677,000	22.6
1879–'80	1,128,000	308,000	1,436,000	21.4
1878–'79	847,000	268,000	1,115,000	23.9

*Estimated.

In the present decade the mill consumption, it will be seen, has increased by no less than 204 per cent. Ten years ago the mills apart from the hand-loom industry, an unknown quantity, took one-fourth of the visible supply; now they require over one-third. We are, therefore, within measurable distance of the period when India will require to import cotton if the trade continue to expand at its present rate of progression. There are pessimists who affirm that, as the trade depends upon China for its very existence, the day is not far distant when the Celestial Empire will, by setting up mills of her own, pay India back in the same coin as India has paid England. But, like most matters celestial, it will be time enough to think of this when John Chinaman gives India something more than a hint. No country in the world can point to such remarkable figures as India can in her export trade in cotton yarns. In a dozen years the shipments have risen from 8,000,000 pounds to 113,500,000 pounds. The increase last year on the preceding twelve months was 21,750,000 pounds, equal to over 23½ per cent. On the two years before the improvement was 35,333,333 pounds, equal to over 45 per cent.— *London Economist, July 14, 1888*

THE TRANS-CASPIAN RAILWAY.

[Translation from the Journal de St. Petersburg—transmitted by Mr. Wurts.]

A Russian writer, who knows Central Asia, having given attention to it some years, sends us the following communication:

The event of the 15th of May, 1888, will certainly take a prominent place in the history of the civilization of people in the last quarter of the nineteenth century. Thanks to the extraordinary energy of General Annenkoff, that day, the anniversary of the coronation of their Imperial Majesties was solemnly celebrated by the inauguration of a railway of 1,345 versts, binding forever the heart of Central Asia (Samarcand) to Russia. It is truly surprising with what rapidity this line, which extends from the borders of the Caspian to the tomb of Tamerlane, was completed.

Since 1880 all Western Europe, and especially England, has followed with an attentive eye our successes in Central Asia. In fact the events were of a nature to interest all the world. The capture of the fortress of Géok-Tépé (January 12, 1881) led to the final fall of the barbarous domination of the Turcomans; the peaceful annexation of Merv, that proud city which for centuries has troubled its neighbors of Bokhara and Persia; the defeat of the Afghans near Kouschk (March 4, 1885); the extention of the Russian protectorate over Bokhara; all these events raised the prestige of the Russian name to a great height among the populations of Central Asia, India, Afghanistan, and Persia. But how has the importance of the rôle of Russia been increased by the completion of this work, by means of which every learned historian and archæologist may study at his ease the monuments of Samarcand, the most ancient

capital of the province of Sogdiana, erected on the ruins of the monarchy of Alexander, or may undertake archæological excavations among the ruins of the ancient Merv-Baïram-Ali? What an immense field is opened to commerce by the new line! Thanks to it, the rich Turcoman carpets, the wool of merinos, the silk of Bokhara, the leather, the silk stuffs of Samarcand, and the products of the minor industries of these countries can in twelve or thirteen days not only reach the Russian commercial centers, but also those of Paris, Vienna, Berlin, and London.

It is, therefore, but natural that the solemnity of the 15th of May should have assumed the character of a fête.

The construction of the Trans-Caspian Railway was begun at the close of 1880. To facilitate the transportation of the food and forage of the troops of General Skobélew, then on the march from the Gulf Mikhaïlovsky, on Ghéok-Tépé, a line 22 versts long was built between the gulf and the aoul of Moullah-Kara. After the capture of Ghéok-Tépé in 1881 this line was prolonged to the stronghold of Kizyl-Arvat (217 versts). In this state the line was kept up to 1885. When in the month of February of that year alarming news of the situation on the Afghan frontier was spread, it was decided to prolong the railway, as a stroke of strategy, to the banks of the Amou-Daria. As circumstances required that this work should be completed as soon as possible (the line between Kizyl-Arvat and Tchardjoui, on the Amou-Daria, was to have a length of 754 versts), its execution was confided to General Annenkoff, who directed the service of the transportation of the troops of the Empire. Facts were not long in showing how well worthy of this confidence was the general. On July 2, 1885, the first rails were placed at Kizyl-Arvat, and from the 29th of November of the same year the station Askhabad was open. On July 2, 1886, the line reached the stronghold of Merv, and on November 30 the Bokharan city of Tchardjoui on the Amou-Daria. At this point the strategic rôle of the railway ceases.

Nevertheless the line would certainly not have the importance that it possesses now if it had not been carried on to at least the first commercial center, for instance, the city of Bokhara. Therefore, at the suggestion of the constructor, it was decided, the 15th of June, 1887, to build it from Tchardjoui on to Samarcand. The 16th of January, 1888, the first rails were laid on the right bank of the Amou, and the 15th of May the first locomotive came to a stand before the tomb of Tamerlane.

There, in a few words, is the history of the construction of the longest European railway.

We have been particular in stating the precise dates which mark the opening of the different sections of the line, for even on this point the organs of the Russian press do not seem, it appears to us, to be well informed. Have we not seen, as an example, one of the most serious journals affirm lately that the section from the Gulf Mikhaïlovsky to Askhabad was built during the expedition of General Skobélew? How can it be expected after that that people should be well informed about this railway?

Without touching upon the strategic nature of the line, we shall concern ourselves only about its value for commerce and industry. It is true that the want of space does not permit us to enter into details.

The writer of these lines has had occasion to visit the Trans-Caspian territory before and after the construction of the railway. These journeys have enabled him, without in the least being inclined to exaggerate this great undertaking, to see for himself that the railway has animated the desert countries of the Turcomans so that they are now not recognizable. The populations of the cities of Askhabad, Merv, and Tchardjoui have rapidly increased. The sandy island and desert of Ouzoun-Ada are transformed into a bay of the first order, with a town having its streets, squares, bazars, and a church. All these facts confirm the saying of the Yankees that it is not by the populated centers that railways are built, but that it is only necessary for a railway to pass by a desert for it to be transformed into a flourishing oasis.

It is entirely owing to the railway that the gigantic undertaking of the restoration of the dyke of Sultan-Bent, on the Mourgab, destroyed three hundred years ago, can be executed, and

thereby call back into life the ancient granary of Central Asia. If, by the reparation of the dyke, the administration of the Crown property succeeds in irrigating only one-half of the land which it is expected to reclaim—that is, 150,000 instead of 300,000 déciatines (2⅝ acres, the déciatine)—our spindles can find in Russia one-half of the cotton they need, and will no longer have to import it from abroad. Then it will not be surprising if we see American journals declare that Russia, instead of remaining a consumer of cotton, has become a producer and sends its products to foreign markets.

Let us not, however, be optimists. Let us be contented with the prospect of the economy of 90,000,000 of rubles that Russia pays annually for its imports of cotton. But it is especially the territories of Bokhara, Khiva, and Turkestan that will profit by the building of this line. He who has crossed the superb plain of Zaraschane and has been able to admire the flowers of Samarcand, Katta-Kourgan, Nouveau-Margellen, and Taschkent alone can give an account of the importance of this work. If, notwithstanding the entire absence of means of transportation (for one can not consider transportation by camel as a serious thing, the camel supporting a load of from 12 to 16 poods only, 38 pounds to the pood, and requiring from two to three months to go from Taschkent to Orenburg), the production of cotton has in seventy-five years almost doubled in the territories of Khiva, Bokhara, Kokhand, and Turkestan, it is beyond doubt that it will soon be increased tenfold, thanks to the building of the railway.

Moreover, by the finishing of this road, at best, half of Iran will pass naturally into the radius of Russian commerce. The economic development will be particularly marked in the rich Persian province of Khorassan, with its holy city of Meshed. Twenty years ago attempts were made on one side to enter into commercial relations with that city, and it is solely on account of the lack of means of communication that they came to nothing. As soon as the carriage-road between Askhabad, Koutchan, and Meshed is finished, the Trans-Caspian Railway will receive by this road millions of poods of merchandise, and the province of Khorassan will again become what it was formerly—the granary of Persia.

GERMANY'S TRADE IN THE YEAR 1887.

The April number of the Statistics of the German Empire contains a definite statement of the imports and exports of the German Empire during the year 1887.

Of special commerce (exclusive of goods in transit or to be finished), the imports amounted to 3,188,800,000 marks = $758,930,000, and the exports to 3,190,100,000 marks = $759,250,000, showing the surplus of exports to be 1,000,300 marks = $320,000. Deducting the value of declared imports and exports of gold and silver in bullion, scrap, and coins, partly used to balance accounts, the value of imports amounted to 3,124,700,000 marks = $743,600,000, and the exports to $746,140,000; showing the excess of exports to be 10,600,000 marks = $2,540,000. Such excess would be larger by 27,800,000 marks if goods imported or exported for being finished or refined were included—the value of such articles imported amounting to 61,400,000 marks and those exported to 89,200,000.

A board of experts, intrusted with estimating wholesale or average values, reports, as a rule, a tendency for higher prices in an industrial respect. Prices for raw material and manufactures may have experienced a greater decline than in the preceding year in many instances, but a number of others have perceptibly increased, while many kinds have undergone but little or no change.

Prices of such articles of food and consumption as are not produced in Germany (coffee, cocoa, currants, and pepper) have increased. Agricultural products, however, have shown no improvement; on the contrary, most of them have further declined, particularly steers, oxen and cows, meat, wheat, rye, oats, barley, corn, peas and lentils, potatoes, beans, fodder of all kinds, straw, clover grass, hemp, mustard seed, linseed, etc. The same decline of prices is noticeable in the export of cows, hogs, sheep, barley, peas, potatoes, clover seed, and flour.

The imports of the year 1887 (after deducting gold, silver in bullion, scrap, and coins), compared with the year 1886, have increased by 2,441,700 tons (1 ton = 2,200 pounds), and in value by 236,400,000 marks; the exports by 571,440 tons, and by 149,700,000 marks in value.

Increase of the volume of imports has, in the main, been effected by the increased importation of the following articles:

	Tons.
Waste, manures, coal	453,845
Fresh fish and eggs	212,419
Wheat	273,976
Rye	73,278
Oats	86,546
Barley	157,630
Rice	9,611
Flour, etc.	4,553
Potatoes	19,498
Fresh and dried fruit	9,581
Ardent spirits	2,635
Tobacco in leaf, oil seed	20,514
Petroleum	71,005
Lubricating oil	10,376
Cubic niter	18,162
Resin, wood bark, tan, asphaltum and bituminous marly-stone, chalk, lime and cement raw stones	89,274
Slate	13,677
Bricks and tiles	33,483
Ores of lead, copper, and iron	223,541
Dross of ores	66,011
Pyrites, alum ore, raw lead, rails, lumber, timber	413,482
Raw cotton	40,003
Flax, hemp, and jute	.....

This increased import, in quantity, is slightly balanced by a diminished import, as follows:

	Tons.
Salted herrings, corn, and dari	9,755
Beans, coffee	21,797
Lard	4,303
Coke	13,579
Borax and boracic acid, oil varnish, chloride of lime, sulphate of ammonia, fluted tiles, glazed bricks and clay slabs	4,975
Zinc ore	8,455
Pig-iron	7,763
Cotton, linen, and woolen yarn	5,064

Hogs, 274,883 heads.

The increase in the volume of exports is chiefly caused by—

	Tons.
Bran, linseed cake, straw, coke	84,483
Pit coal	126,137
Pressed coal, butter, potato starch and potato flour, sugar	51,066
Fruit juices mixed with alcohol, calcined soda, baryta, chloride of potassium	458
Sulphite of soda, super-phosphate	17,603
Ice, mineral water, hollow glass, cement	27,640
Trass, lime, bricks and burned coarse paving-stones, ordinary tiles (not glazed), pyrites, zinc ore, dross of ores	23,776
Scrap-iron, iron articles	82,499
Paper and paste-board	9,628
Flax, hemp, and woolen goods	1,667

In general, these and other increases are higher than the decrease of other export articles, though, in some instances, quite considerable decreased exports are reported, viz:

	Tons.
Wheat	5,454
Oats	8,209
Barley	37,333
Potatoes	26,194
Flour	1,060
Green vegetables and fruit	9,138
Sugar beets	18,954
Spirits	21,328
Wine in kegs	8,887
Salt	20,316
Rape-seed, colza	6,259
Stassfurt waste salt	21,481
Iron ores	87,098
Pig-iron	38,388
Bloom-iron, iron wire (exclusive of coppered, tinned, zincked, etc.)	3,067

Horses and cattle, 101,568 heads.

Computing the sales for 1887 at the average prices estimated for 1886, a comparison shows (prices for both years being at the same rates) that imports, after deducting the value of gold, silver in bullion, etc., would have increased only by 232,571,000 marks (instead of by 236,420,000 marks, in reality), and exports by 158,954,000 marks (instead of by 149,732,000, in reality). Hence, fluctuations of prices alone caused an increase of import values by 3,849,000 marks, and a decrease of export values by 9,222,000 marks.

An increase of values of imports took place in horses, fresh fish, eggs, wheat, oats, barley, arrac, rum, cognac, coffee, raw tobacco, mineral oils, zinc and copper ore, cubic niter, lumber and timber, cotton, flax and hemp.

A considerable diminution took place in the value of imports of hogs, salted herrings, Peruvian bark, hides and skins, precious stones, silk and silk waste, linen and woolen yarns, cotton and woolen goods.

Exports have increased in values, particularly in sugar, butter, tar, dyestuffs, chloride of potassium, amber, musical instruments, machine and ma-

chine parts (exclusive of sewing-machines), glass and glassware, paper and paper goods, clothing, linen goods, books, carded wool, half-silk fringes, cotton and woolen goods.

A considerable diminution in values of exports was noticed in horses, sheep, barley, spirits and wines in kegs, quinine, gunpowder, skins for furs, lumber, timber, notions, fancy goods, sheep wool, woolen yarn, and woolen trimmings.

Since the year 1880, imports and exports (after deduction of gold and silver in bullion) have experienced the following fluctuations, both in volume and value, viz:

Year.	Imports.		Exports.	
	Tons.	Marks.	Tons.	Marks.
1880	14,170,000	2,820,000	16,401,000	2,895,000
1881	14,848,000	2,963,000	16,672,000	2,977,000
1882	15,299,000	3,129,000	17,208,000	3,191,000
1883	16,297,000	3,263,000	19,239,000	3,272,000
1884	17,787,000	3,260,000	19,151,000	3,204,000
1885	17,867,000	2,944,000	18,813,000	2,860,000
1886	16,944,000	2,888,000	18,924,000	2,985,000
1887	19,386,000	3,124,000	19,495,000	3,135,000

In giving the figures of imports and exports it must be borne in mind that imports and exports in river and sea vessels are not subject to declaratory rules, and that the corresponding quantities and values are not given. Thus the values of such ships as are built at domestic wharves of domestic material, and sold to foreign countries, are not included in the above sums. Since the sale of vessels, particularly of men-of-war and torpedo boats, for foreign account has been quite considerable of late and greatly counterbalances purchases of vessels for home use, and since the values of vessels built for foreign account amount to millions, this must favorably affect the values of exports.

It deserves also consideration that from 1879 to 1887, in Germany, as well as in foreign countries, repeated changes in tariff rates have been introduced, causing higher duties for many goods. In giving import and export figures, this circumstance should not be overlooked. The increased import of 1884 and 1885, for instance, is mainly attributable to the new tariff measures which went into force 1885; in the following year this increase was balanced by a reduced importation. This applies also to 1887, when the increase of duties upon ardent spirits, cereals, etc., was decreed.

The depression of values of imports and exports from 1883 to 1886 is chiefly due to the heavy fall of prices which raw produce and manufactures experienced during those years to an ever-growing extent.—BERLIN, *June 27, 1888.*

F. RAINE,
Consul-General.

Statement showing values of merchandises exported from the German customs territory during the calendar year 1887 (exclusive of goods in direct transit and goods refined and finished.—Special commerce).

Articles.	Goods exported.		Increase and decrease in 1887, as compared with 1886.	Total value.		Increase and decrease in 1887, as compared with 1886.
	1886.	1887.		1886.	1887.	
	Tons.	*Tons.*	*Tons.*			
Animals	163,467	154,582	— 8,885	$23,934,000	$21,366,000	— $2,568,000
Seeds and plants for seed, food, and gardening	83,167	95,186	+ 12,019	4,770,000	4,642,000	— 128,000
Manure and waste materials	137,228	193,656	+ 56,428	2,893,000	3,909,090	+ 1,016,000
Fuel	9,725,873	9,942,795	+ 216,922	22,461,000	22,911,000	+ 450,000
Food and other articles of consumption	1,708,166	1,623,019	— 85,147	91,817,000	97,527,000	+ 5,710,000
Animal food:						
Raw and simply-prepared articles of consumption	38,988	41,875	+ 2,887	5,258,000	6,589,000	+ 1,331,000
Manufactures	15,855	18,032	+ 2,177	5,458,000	6,281,000	+ 823,000
Cereals and other farinaceous articles of food:						
Raw materials	262,690	187,258	— 75,432	5,438,000	2,822,000	— 2,616,000
Manufactures	190,180	192,091	+ 1,911	8,761,000	8,635,000	— 126,000
Fruit, vegetables, fresh and dried	124,803	97,872	— 26,931	2,761,000	2,489,000	— 272,000
Spices, table-salt, ice-cream	185,027	166,967	— 18,060	8,637,000	8,478,000	— 159,000
Coffee and coffee substitutes, cocoa, tea:						
Raw materials	13,505	16,206	+ 2,701	476,000	576,000	+ 100,000
Manufactures	3,370	5,450	+ 2,080	215,000	346,000	+ 131,000
Sugar, sirup, and molasses	623,903	675,736	+ 51,833	35,408,000	44,750,000	+ 9,342,000
Fermented beverages	238,757	213,618	— 25,139	16,431,000	14,034,000	— 2,397,000
Comfits, preserves, and other fine articles of consumption	6,789	5,596	— 1,193	1,593,000	1,414,000	— 179,000
Tobacco and tobacco manufactures:						
Raw materials	2,971	920	— 2,051	501,000	187,000	— 314,000
Manufactures	1,325	1,398	+ 70	878,000	923,000	+ 45,000
Industry of fats, fixed oils, and mineral oils	62,392	56,821	— 5,571	5,795,000	5,626,000	— 169,000
Raw materials	29,425	20,036	— 9,389	1,620,000	1,195,000	— 425,000
Manufactures	32,967	36,785	+ 3,818	4,175,000	4,431,000	+ 256,000
Raw materials and products of chemical and pharmaceutical industry	597,361	627,267	+ 29,906	51,022,000	53,871,000	+ 2,849,000
Raw materials:						
Raw materials of chemical industry	171,463	159,208	— 12,255	1,377,000	1,407,000	+ 30,000
Drugs for medicinal purposes and for perfumes	2,550	2,549	— 1	1,321,000	1,363,000	+ 176,000

Statement showing values of merchandises exported from the German customs territory during the calendar year 1887, etc. — Continued.

Articles.	Goods exported.		Increase and decrease in 1887, as compared with 1886.	Total value.		Increase and decrease in 1887, as compared with 1886.
	1886.	1887.		1886.	1887.	
Raw materials — Continued.	*Tons.*	*Tons.*	*Tons.*			
Resins, waste for making glue	22,187	24,270	+ 2,083	937,000	1,031,000	+ 94,000
Ferments and findings	5,370	4,619	— 751	716,000	650,000	— 66,000
Raw dye-stuffs	49,247	52,623	+ 3,376	1,178,000	1,149,000	— 29,000
Tanning stuffs, raw	4,575	6,397	— 1,822	163,000	242,000	+ 79,000
Manufactures:						
Simple substances, bases, acids, and salts	205,938	232,446	+ 26,508	11,359,000	12,632,000	+ 1,273,000
Ether and volatile oils, medicines and perfumes	28,778	32,790	+ 4,012	6,575,000	6,325,000	— 250,000
Resin oils, varnishes, lakes, glutens	15,337	16,904	+ 1,567	2,316,000	2,409,000	+ 93,000
Explosives and priming goods	8,854	8,023	— 831	3,904,000	3,230,000	— 674,000
Pitch, tar, and distillates of tar	27,602	25,321	— 2,281	1,723,000	1,993,000	+ 270,000
Stationery, colors	55,460	62,117	+ 6,657	19,452,000	21,434,000	+ 1,982,000
Raw materials and manufactures of asbestos, stone, clay, and glass industry	2,153,606	2,476,328	+ 322,722	24,300,000	26,793,000	+ 2,493,000
Earths and stones, glass waste	1,223,896	1,457,096	+ 233,200	7,040,000	8,014,000	+ 974,000
Asbestos articles	113	202	+ 89	51,000	90,000	+ 39,000
Stoneware	37,141	45,092	+ 7,951	1,336,000	1,459,000	+ 123,000
Clay and china ware	808,232	879,473	+ 71,241	7,645,000	8,085,000	+ 440,000
Glassware	84,224	94,465	+ 10,241	8,227,000	9,145,000	+ 918,000
Raw materials and manufactures of metal industry, except machines, instruments, and apparatuses	3,226,523	3,221,406	— 5,117	84,792,000	89,604,000	+ 4,812,000
Ores	1,864,778	1,808,326	— 56,452	2,127,000	2,150,000	+ 23,000
Raw metals, not precious, also coined	458,856	425,448	— 33,408	12,808,000	12,761,000	— 47,000
Ironware:						
Simply worked articles	504,805	452,819	— 48,014	14,387,000	16,996,000	+ 2,609,000
Finished manufactures	360,792	395,277	+ 34,485	26,937,000	30,817,000	+ 3,880,000
Articles of other metals not precious:						
Simply worked articles	24,025	24,930	+ 905	3,223,000	3,369,000	+ 146,000
Finished manufactures	12,818	14,265	+ 1,447	9,269,000	10,252,000	+ 983,000
Precious metals also coined	449	341	— 108	16,040,000	13,359,000	— 2,681,000
Raw materials and manufactures of the wood-carving and plaiting industry	545,625	523,372	— 22,253	24,819,000	25,592,000	+ 773,000
Building wood and timber, raw	248,338	255,342	+ 7,004	2,069,000	2,127,000	+ 58,000

Carving and plaiting materials, bristles	9,487	10,929	+	1,442	4,098,000	5,210,000	+ 1,112,000
Wooden and carved ware:							
Simply worked articles	242,987	213,710	—	29,277	4,656,000	3,985,000	— 671,000
Finished manufactures	39,682	37,949	—	1,733	12,216,000	12,354,000	+ 138,000
Plaited, brush-makers', and sieve-makers' ware	5,131	5,442	+	311	1,780,000	1,916,000	+ 136,000
Raw materials and manufactures of the paper industry	152,694	172,816	+	20,122	19,338,000	22,500,000	+ 3,162,000
Raw materials and half stuff	78,795	88,326	+	9,531	3,555,000	3,960,000	+ 405,000
Paper and pasteboard	63,932	73,560	+	9,628	12,068,000	14,512,000	+ 2,444,000
Manufactures of paper and pasteboard	9,967	10,930	+	963	3,715,000	4,028,000	+ 313,000
Raw materials and manufactures of the leather, oil-cloth, and fur-goods industry	33,914	35,165	+	1,251	58,393,000	58,509,000	+ 116,000
Raw hides and skins	17,045	17,818	+	773	6,701,000	6,396,000	— 405,000
Dressed skins, leather, oil-cloth	9,500	9,512	+	12	18,878,000	16,394,000	— 2,484,000
Leather, harness-makers' and purse-makers' works	7,064	7,395	+	331	31,887,000	34,725,000	+ 2,838,000
Furs	305	440	+	135	926,000	994,000	+ 68
Raw materials and manufactures of the textile and felt industry, clothes	208,004	237,920	+	29,916	242,036,000	255,115,000	+ 13,079,000
Hairs, feathers, and other quilt materials	5,465	5,699	+	234	4,909,000	5,253,000	+ 344,000
Spinning materials	105,658	127,992	+	22,334	28,336,000	30,114,000	+ 1,778,000
Yarns and wads	18,378	17,739	—	639	25,714,000	24,351,000	— 1,363,000
Rope-makers' ware	4,009	4,490	+	481	913,000	1,023,000	+ 110,000
Rugs, felts, hair weavings	2,160	2,605	+	445	1,681,000	2,028,000	+ 347,000
Stuffs	46,599	51,299	+	4,700	97,176,000	104,633,000	+ 7,457,000
Hosiery	11,770	12,856	+	1,086	25,270,000	25,913,000	+ 643,000
Trimmings, button-makers' ware	5,594	6,227	+	633	13,550,000	14,872,000	+ 1,322,000
Laces, embroideries, blond laces	1,025	1,280	+	255	14,128,000	14,868,000	+ 740,000
Clothes, linen underwear, millinery	6,519	6,900	+	381	23,143,000	24,690,000	+ 1,547,000
Bonnets, ornamental feathers, flowers, ornamental hair	827	833	+	6	7,216,000	7,132,000	— 84,000
Caoutchouc industry	3,074	3,014	—	60	5,525,000	5,331,000	— 194,000
Raw materials	179	211	+	32	341,000	401,000	+ 60,000
Manufactures	2,895	2,803	—	92	5,184,000	4,929,000	— 255,000
Railroad vehicles, upolstered cars and furniture	8,519	7,338	—	1,181	660,000	785,000	+ 125,000
Engines, machines, and apparatuses	86,840	94,699	+	7,859	27,224,000	28,732,000	+ 1,508,000
Fancy goods and jewelry	15,996	17,679	+	1,683	21,554,000	18,649,000	— 2,905,000
Fancy goods and jewelry, except toys	2,754	2,481	—	273	16,965,000	13,652,000	— 3,313,000
Toys	13,242	15,198	+	1,956	4,589,000	4,997,000	+ 408,000
Articles of literature and fine arts	11,745	12,553	+	800	14,780,000	17,577,000	+ 2,797,000
Sundries, no description	89	73	—	16	113,000	93,000	— 20,000
Total	18,924,283	19,495,689	+	571,406	726,226,000	759,255,000	+ 33,029,000

Statement showing the values of merchandises imported into the German customs territory during the calendar year 1887 (exclusive of goods in direct transit and goods refined and finished) for consumption.—Special commerce.

Articles.	Goods imported for consumption.		Increase and decrease in 1887, as compared with 1886.	Total value.		Increase and decrease in 1887, as compared with 1886.
	1886.	1887.		1886.	1887.	
	Tons.	*Tons.*	*Tons.*			
Animals	190,127	166,656	— 23,471	$40,757,000	$38,798,000	— $1,959,000
Seeds and plants for seed, food, and gardening	112,006	112,770	+ 764	6,228,000	6,600,000	+ 372,000
Manure and waste materials	661,104	749,722	+ 88,618	13,596,000	14,371,000	+ 775,000
Fuel	7,065,878	7,529,096	+ 463,218	11,784,000	12,484,000	+ 698,000
Food and other articles of consumption	2,526,849	3,184,425	+ 657,576	160,590,000	191,281,000	+ 30,691,000
Animal food:						
Raw and simply-prepared articles of consumption	242,502	260,718	+ 18,216	20,193,000	23,499,000	+ 3,306,000
Manufactures	53,207	50,575	— 2,632	11,342,000	11,347,000	+ 5,000
Cereals and other farinaceous articles of food:						
Raw materials	1,536,783	2,149,877	+ 613,094	41,263,000	54,504,000	+ 13,241,000
Manufactures	163,470	187,887	+ 24,417	7,916,000	9,132,000	+ 1,216,000
Fruit, vegetables, fresh and dried	227,439	244,822	+ 17,383	13,476,000	15,196,000	+ 1,720,000
Spices, table-salt, ice-cream	41,501	39,688	— 1,813	3,854,000	4,276,000	+ 422,000
Coffee and coffee substitutes, cocoa, tea:						
Raw materials	134,817	114,127	— 20,690	35,239,000	42,677,000	+ 7,438,000
Manufactures	1,772	1,664	— 108	342,000	371,000	+ 29,000
Sugar, sirup, and molasses	6,201	7,165	+ 964	437,000	512,000	+ 75,000
Fermented beverages	76,383	82,250	+ 5,862	10,133,000	10,711,000	+ 578,000
Comfits, preserves, and other fine articles of consumption	2,378	2,488	+ 110	1,007,000	1,033,000	+ 26,000
Tobacco and tobacco manufactures:						
Raw materials	39,151	41,915	+ 2,764	12,843,000	15,306,000	+ 2,363,000
Manufactures	1,245	1,249	+ 4	2,543,000	2,716,000	+ 163,000
Industry of fats, fixed oils, and mineral oils	813,589	933,393	+ 119,804	38,395,000	41,815,000	+ 3,420,000
Raw materials	264,100	297,999	+ 33,899	14,033,000	15,613,000	+ 1,580,000
Manufactures	549,489	635,394	+ 85,905	24,362,000	26,202,000	+ 1,840,000
Raw materials and products of chemical and pharmaceutical industry	836,000	915,834	+ 79,834	48,845,000	52,244,000	+ 3,399,000
Raw materials:						
Raw materials of chemical industry	361,905	407,708	+ 45,803	10,052,000	10,999,000	+ 947,000

Drugs for medicinal purposes and perfumes	9,915	9,263	—	652	4,903,000	4,456,000	—	447,000
Resins, waste for making glue	80,657	94,998	+	14,341	4,607,000	4,844,000	+	237,000
Ferments and finings	20,701	23,597	+	2,896	1,338,000	1,457,000	+	119,000
Raw dye-stuffs	90,860	90,511	—	349	2,915,000	2,936,000	+	21,000
Tanning stuffs, raw	93,658	109,052	+	15,394	4,285,000	5,327,000	+	1,042,000
Manufactures:								
Simple substances, bases, acids, and salts	81,305	76,247	—	5,058	5,708,000	6,159,000	+	451,000
Ether and volatile oils, medicines, and perfumes	6,523	6,054	—	469	2,229,000	2,510,000	+	281,000
Resin oils, varnishes, lakes, glutens	13,526	14,661	+	1,135	2,166,000	2,279,000	+	113,000
Explosives and priming goods	1,603	1,221	—	382	596,000	427,000	—	169,000
Pitch, tar, and distillates of tar	47,693	52,340	+	4,647	2,227,000	2,721,000	+	494,000
Stationery, colors	27,654	30,182	+	2,528	7,817,000	8,129,000	+	312,000
Raw materials and manufactures of asbestos, stone, clay, and glass industry	937,809	1,168,972	+	231,163	9,222,000	11,047,000	+	1,825,000
Earths and stones, glass waste	802,990	1,001,796	+	198,806	6,072,000	7,329,000	+	1,257,000
Asbestos articles	51	27	—	24	22,000	11,000	—	11,000
Stoneware	8,793	7,949	—	844	443,000	409,000	—	34,000
Clay and china ware	117,210	149,458	+	32,248	749,000	950,000	+	201,000
Glassware	8,765	9,742	+	977	1,935,000	2,319,000	+	384,000
Raw materials and manufactures of metal industry, except machines, instruments, and apparatuses	1,221,972	1,533,611	+	311,639	41,394,000	49,040,000	+	7,646,000
Ores	974,839	1,271,822	+	296,983	11,665,000	15,011,000	+	3,346,000
Raw metals, not precious, also coined	202,374	204,799	+	2,425	8,481,000	10,038,000	+	1,557,000
Ironware:								
Simply worked articles	25,037	26,749	+	1,712	1,321,000	1,391,000	+	70,000
Finished manufactures	16,949	27,488	+	10,539	2,510,000	2,850,000	+	340,000
Articles of other metals, not precious:								
Simply worked articles	687	732	+	45	129,000	172,000	+	43,000
Finished manufactures	1,747	1,709	—	38	1,277,000	1,155,000	—	22,000
Precious metals, also coined	339	312	—	27	16,110,000	18,423,000	+	2,313,000
Raw materials and manufactures of the wood-carving and plaiting industry	1,877,846	2,295,513	+	417,667	29,299,000	34,634,000	+	5,335,000
Building wood and timber, raw	1,140,580	1,307,517	+	166,937	6,786,000	7,779,000	+	993,000
Carving and plaiting materials, bristles	34,432	37,205	+	2,773	6,936,000	7,095,000	+	159,000
Wooden and carved ware:								
Simply worked articles	686,882	932,838	+	245,956	10,872,000	14,671,000	+	3,799,000
Finished manufactures	13,735	15,411	+	1,676	3,170,000	3,347,000	+	177,000
Plaited, brush-makers', and sieve-makers' ware	2,217	2,542	+	325	1,535,000	1,741,000	+	206,000
Raw materials and manufactures of the paper industry	56,418	63,964	+	7,546	2,815,000	3,092,000	+	277,000
Raw materials and half stuff	51,022	58,059	+	7,037	1,733,000	1,922,000	+	189,000
Paper and pasteboard	4,443	4,763	+	320	648,000	648,000	.....	.....
Manufactures of paper and pasteboard	953	1,142	+	189	433,000	522,000	+	89,000

Statement showing the values of merchandises imported into the German customs territory during the calendar year 1887, etc.—Continued.

Articles.	Goods imported for consumption.		Increase and decrease in 1887, as compared with 1886.	Total value.		Increase and decrease in 1887, as compared with 1886.
	1886.	1887.		1886.	1887.	
	Tons.	*Tons.*	*Tons.*			
Raw materials and manufactures of the leather, oil-cloth, and fur-goods industry	80,179	79,578	— 601	$41,883,000	$39,254,000	— $2,629,000
Raw hides and skins	68,857	67,909	— 948	21,752,000	20,215,000	— 1,537,000
Dressed skins, leather, oil-cloth	10,361	10,533	+ 172	16,139,000	14,364,000	— 1,775,000
Leather, harness-makers' and purse makers' works	871	1,006	+ 135	3,848,000	4,532,000	+ 684,000
Furs	90	130	+ 40	144,000	157,000	+ 13,000
Raw materials and manufactures of the textile and felt industry, clothes	524,177	608,810	+ 84,633	230,053,000	236,723,000	+ 6,670,000
Hair, feathers, and other quilt materials	10,116	10,499	+ 383	6,027,000	5,849,000	— 178,000
Spinning materials	446,220	536,078	+ 89,858	121,998,000	137,133,000	+ 15,135,000
Yarns and wads	60,251	55,469	— 4,782	79,569,000	73,794,000	— 5,775,000
Rope-makers ware	220	249	+ 29	55,000	57,000	+ 2
Rugs, felts, hair weavings	691	811	+ 120	355,000	331,000	— 24,000
Stuffs	5,399	4,544	— 855	11,216,000	10,236,000	— 980,000
Hosiery	125	133	+ 8	398,000	394,000	— 4
Trimmings and button-makers' ware	144	141	— 3	450,000	437,000	— 13,000
Laces, embroideries, blond-laces	415	284	— 131	5,826,000	4,214,000	— 1,612,000
Clothes, linen underwear, millinery	319	300	— 19	1,346,000	1,258,000	— 88,000
Bonnets, ornamental feathers, flowers, ornamental hair	277	302	+ 25	2,813,000	3,018,000	+ 205,000
Caoutchouc industry	2,989	3,469	+ 480	5,324,000	6,094,000	+ 770,000
Raw materials	2,155	2,515	+ 360	3,847,000	4,489,000	+ 642,000
Manufactures	834	954	— 120	1,477,000	1,604,000	+ 127,000
Railroad vehicles, upholstered cars and furniture	1,669	485	— 1,184	299,000	140,000	— 159,000
Engines, machines, and apparatuses	31,845	35,971	+ 4,126	7,826,000	10,018,000	+ 2,192,000
Fancy goods and jewelry	566	578	+ 12	6,855,000	5,619,000	— 1,236,000
Fancy goods and jewelry, except toys	434	442	+ 8	6,808,000	5,573,000	— 1,235,000
Toys	132	136	+ 4	47,000	46,000	— 1,000
Articles of literature and fine arts	3,846	3,718	— 128	5,706,000	5,695,000	— 11,000
Sundries, no description						
Total	16,944,869	19,386,565	+ 2,441,696	700,902,000	758,934,000	+ 58,032

TRADE AND TECHNICAL SCHOOLS.

There has recently come into my hands a prospectus of one of the leading technical schools of Germany, and as the technical and trade schools of the Empire have quite a reputation at home and abroad, and reference is from time to time made to them in foreign publications, it has occurred to me that an exposition of the courses of study pursued at one of the foremost of them would be worthy of a place in our Consular Reports, and I therefore write an article on the subject.

This institution, called Technikum, is under the particular control of the city of————, with a general superintendence by the Saxon ministry of the interior, and has for protectors Baron von Körmeritz, Count zu Münster, Prince Schwarzenberg, and Baron von Welck. It is open to all nationalities, and is for the purpose of familiarizing young men with machinery and its operation and grounding them in the different branches of industry, and consists of two departments, one designated as the engineer school, where young men are prepared for managing factories and machine-shops, and the other as the master-workman school, where young men are fitted to be overseers, bosses, etc.

The first is for those who expect to have industrial establishments of their own or become superintendents of large establishments, or to travel for such establishments, and the second more for master-workmen, modelers, and mechanicians. In the engineer school technical instruction is given in spinning, weaving, milling, brewing, making of porcelain, earthenware, glassware, furniture, starch, matches, steel and ironware, electrical apparatus, elevators, condensers, fire-proof safes, gas-fitters' articles, scientific articles of various kinds, machine building, mill construction, etc. In the master-workman school young men are taught to manage and construct machinery who think of becoming bosses, designers, draughtsmen, modelers, mechanicians, etc., in machine-shops, mills, and factories, or expect to have small workshops or establishments of their own. Students are required to be at least sixteen years old.

The graduates of the Technikum are scattered all over the German Empire in industrial establishments, and are to be met with also in foreign countries. The names of some three hundred of them are given as references in the pamphlet before me, with the positions they hold and the names of the establishments with which they are connected.

While at the Technikum young men have no opportunity to support themselves by outside work, as their time is all taken up in study and work at the Technikum.

The design of the Technikum is to fit young men for practical life, and with that end in view it is in connection with a large number of factories and industrial establishments, which keep it constantly posted as to all ad-

vances and improvements made in technical knowledge and appliances, of which its pupils get the full benefit. The instruction is so imparted that the pupils come together in classes, not merely to listen to lectures and dissertations on the subjects in which they are interested and have the matter left to them to grasp in the best way they can, without any special explanation being afterwards afforded nor any effort made to ascertain whether they understand and are able to apply what has been said, but the teachers talk with the different pupils individually, so as to teach the less quick-witted and make smooth whatever rough places there may be. Repeated repetitions of the same thing, as well as constant work in execution of the principles taught, materially aid in fixing the instruction given. Pupils are also much employed on constructive work, such as the drawing of machinery and making plans for machines, as well as drawing plans for the building of factories, mills, etc. This takes place daily, and the endeavor is to make the pupils competent to draw up plans and specifications for factories, etc. They are also given practical exercise in operating machinery, testing it in various ways, and estimating its power exercised in hydrometry and in electro-technic and practiced in field surveying.

The Technikum has a library of 2,500 works, consisting of over 3,000 volumes, and containing a large collection of technical drawings (about 4,000 numbers) relating to all branches of technology; a reading-room, in which are kept all the leading technical and industrial periodicals, as well as about 100 of the chief political newspapers of Germany, Austria, Russia, England, etc.; a technological collection; a collection of machine models; a collection of models and materials for teaching construction; a collection of objects for stereometry and descriptive geometry; a collection of wire, wooden, and plaster models for free-hand drawing; a collection of apparatus and instruments in physics, chemistry, electro-technic, field surveying and leveling, and apparatus and instruments for dynamometric and hydrometric exercises.

Scientific excursions are taken from time to time, under the leadership of the teachers, when visits are made by rail or otherwise to factories and industrial establishments of various kinds, and their operation explained at length to the students. The institution under consideration being right in the midst of a very important manufacturing district, and having secured for its pupils from a number of manufacturers the right of visit and inspection of their establishments, claims to possess facilities for imparting a practical knowledge of the different branches of industry enjoyed by no other industrial school. There are some fifty of these industrial establishments to which it has access, embracing machine-shops, foundries, mills, paper factories, spinning and weaving mills, earthenware factories, breweries, dye and printing works, etc.

The pupils of the Technikum are all afforded a certain measure of relief when they meet with an accident while on excursions undertaken under the supervision of their teachers or from testing the power of machinery and the like; that is, if, while visiting factories and examining their machinery and the manner in which it is worked, they meet with an accident not brought

about by grave misconduct on their part, the Technikum allows them a certain amount of money for each day laid up, and if permanent injury is the result, then a certain amount of relief throughout life, or an appropriate lump sum in satisfaction of all demands the student may have on it. If, also, while actually under way to these places or returning therefrom an accident occurs a like relief is granted.

The school terms begin the middle of April and middle of October, and it is immaterial whether the student enters at the spring or autumn term. At other seasons of the year students are taken only when they are sufficiently advanced to join a class on an equality. There are also preparatory classes, beginning in February and August, respectively, where pupils who wish to thoroughly ground themselves in what had been previously learned, to repair a deficiency, or have spare time which they wish to profitably employ until the regular term commences, are fitted for the regular school term. This instruction is given free, but only to those who have paid for the regular term.

The tuition fee, paid in advance for the whole term or in installments, is $32.50 for a term of six months in the higher department and $30 for the same length of time in the lower department. Then, in addition, there is a commencement fee of $1.50, $1, or 75 cents, according to department, for the use of the library and reading-room for the whole time a student is at the Technikum. Needy young men who have been half a year at the Technikum, and conducted themselves honorably during the whole of the time, are granted an abatement of the tuition money, irrespective of their nationality, when they prove to the satisfaction of the directors that they are unable to pay for their instruction. Foreigners, before entering, have to be always provided with a paper in the nature of a passport, and minors with the written consent of their fathers or guardians.

The entire cost of attendance on the institute a term (six months) is reckoned as follows: Instruction, $30 to $32.50; room and board, according to requirements, $10.50 to $17.50 a month, or $62.50 to $105; books, drawing materials and articles, etc., $3.75 to $5.

Students do not board and lodge at the Technikum, though they are directed to good boarding-houses if they desire it. The cheapest board, including room, is put at $10.50 to $11.25 a month. They are all requested to avoid living at hotels, restaurants, and the like. The teachers also take boarders.

The length of time requisite to learn the different branches of work is put at two and a half to three years for the engineer school and at a year and a half for the master-workman school.

Students are not required to have labored to some extent before entering the Technikum at the branch of industry they propose to follow, but it is urgently recommended that they do so, and if not done previous to entering the Technikum it is expected to be undertaken afterwards. Young persons, however, who wish to receive the machinist's diploma must undergo at least a year of practical work before admission to examination for it, and young men

who desire to pass the master-workman's examination must, previous to being admitted to the chief examination, show two years of practical preparation.

Students are expected to conduct themselves in a respectable manner, both within and without the Technikum, to obey all the commands of the directors and teachers, and maintain a deferential deportment towards them. They are required to punctually attend all lessons and exercises, and to be on hand at all examinations. Smoking in the instruction rooms is strictly prohibited, and students' clubs are permitted only when they have an educational end in view and do not interfere with the studies and purpose of the Technikum. The rules of such clubs and lists of their members have to be laid before the director of the Technikum from time to time, and he is to be kept informed of all exercises, lectures, excursions, and the like. Other clubs are strictly prohibited, as incompatible with diligent and regular study and calling for too great an expenditure of time and money, and a participation in their organization or proceedings is regarded as a just ground for prompt expulsion from the Technikum. Meetings, balls, concerts, and the like must have the approval of the director of the Technikum, and he has the right to prohibit students from visiting any public place or saloon which he thinks improper for them to go to.

Students are reprimanded and expelled for misconduct. The expulsion may be for a time or permanently; for minor offenses they are only disciplined.

Students receive, from time to time, certificates showing their standing at the Technikum. Those who have studied and worked with industry at the Technikum are assisted by its managers in obtaining situations upon leaving the institution or subsequently.

The studies pursued are arithmetic, algebra, descriptive and analytical geometry, trigonometry, planimetry, stereometry, algebraic analysis and higher equations, differential and integral calculus, integration of differential equations, drawing, physics, chemistry, mechanics, machine construction, mill building, electro-technic technology, architecture, field surveying and leveling, commercial law, book-keeping, German, French, and English languages, history, geography, stenography, and penmanship, combined with practicable application of principles learned.

In the engineer school there are two courses of study, either of which can be taken at the pleasure of the student, one being two and a half years in duration, and the other three years long. They are known as Courses I and II.

With respect to Course I, the conditions of admission are that the student, in addition to a fair general school education, should be acquainted with the leading rules of arithmetic and algebra and the first principles of geometry, and a certain amount of practical preparation is desired though not demanded. The course is divided up into five half-years. During the first half-year the different branches of study receive the following attention weekly: German language, two hours; algebra, two hours; stereometry, two hours; trigonometry, four hours; physics, two hours; chemistry, two hours; elementary mechanics, four hours; elements of machinery, four hours; drawing, three

hours; geometrical drawing, two hours; descriptive geometry, three hours; drawing elementary machines, six hours; commercial law and book-keeping, one hour; mill construction, two hours — the last mentioned of which is obligatory on those only who are preparing themselves for mill building.

During the second half-year the following is the amount of time devoted weekly to each branch of study: German language, two hours; analysis and higher equations, two hours; analytical geometry, two hours; differential and integral calculus, four hours; physics, two hours; chemistry, two hours; technical mechanics, four hours; principle of cohesion, four hours; elementary machines, four hours; drawing and sketching of models, three hours; descriptive geometry, two hours; drawing elementary machines, six hours; mill building, two hours; double-entry book-keeping (optional), two hours.

In the third half-year the time allotted is as follows: German language, two hours; analytical geometry, two hours; differential and integral calculus, four hours; physics, two hours; chemistry, two hours; technical mechanics, four hours; principle of cohesion, four hours; elementary machines, four hours; drawing and sketching of models, three hours; descriptive geometry, two hours; drawing elementary machines, six hours; mill building, two hours; double-entry book-keeping (optional), two hours.

In the third half-year the time allotted is as follows: German language, two hours; analytical geometry, two hours; electricity and magnetism, two hours; technical mechanics, four hours; hydraulics, two hours; graphostatics, two hours; lifting and transporting machines and presses, four hours; steam-engines, four hours; principles of construction, two hours; chemical technology, two hours; shadow and perspective drawing, two hours; drawing of lifting and transporting machines, three hours; drawing of buildings, three hours; mill building, two hours.

In the fourth half-year the time is divided up as follows: German language, two hours; differential and integral calculus, two hours; electricity and magnetism, two hours; analytical mechanics, two hours; mechanical theory of heat, two hours; propellers and steering, four hours; steam-boilers, two hours; hydraulic motors, four hours; pumps, two hours; mechanical technology, two hours; laws of construction, two hours; drawing of propellers and steering apparatus, six hours; drawing of steam-boilers, three hours; drawing of pumps and water-wheels, three hours; drawing of plans for building, three hours; field surveying and leveling, one afternoon.

During the fifth and concluding half-year of the course the division weekly is as follows: German language, two hours; analytical mechanics, two hours; kinematics, two hours; theoretical principles of machinery, two hours; theory of regulators, two hours; electro-technic, four hours; locomotive construction, two hours; construction of tool machinery, two hours; small motors, two hours; designing and construction in civil engineering, two hours; estimation of costs, one hour; drawing of steam-engines, six hours; drawing of turbines, three hours; practical exercises, one afternoon;

sketching of indicators on steam-engines, one afternoon; measurement of power of machinery, one afternoon; hydrometrical exercises, one afternoon; field surveying and leveling, one afternoon.

Students of Course I are also recommended to study the French and English languages—geography and history—but it is not obligatory upon them to do so. For instruction in French and English an extra charge of $5 each a half-year is made. At the close of each full year those who desire a diploma as machinists have to undergo a preliminary examination with respect to it, and at the close of the entire course comes the graduation examination, and without a year, at least, of practical experience in some machine-shop no one can enter the last examination for the purpose of obtaining the machinist's diploma.

Course II is designed for young fellows who, after leaving school, go to work in some machine-shop and afterwards desire to add scientific training to practical experience. For this course, consequently, less preparation is required than for Course I, and students need only to be familiar with the branches studied up to a boy's fourteenth or fifteenth year in the common schools. This course is three years' long, divided into six half-year terms, and the amount of time given to each branch of study weekly is as follows:

First half-year: German language, four hours; arithmetic, two hours; algebra, six hours; planimetry, four hours; physics, two hours; elementary mechanics, two hours; drawing, six hours; geometrical drawing, three hours; descriptive geometry, three hours; drawing of machines, three hours; commercial law and book-keeping, one hour.

Second half-year: German language, two hours; algebra, six hours; planimetry, two hours; stereometry, two hours; trigonometry, four hours; physics, two hours; elementary mechanics, two hours; principle of cohesion, four hours; elementary machines, four hours; drawing, three hours; descriptive geometry, two hours; drawing elementary machines, six hours; mill building (optional), two hours; double-entry book-keeping (optional), two hours.

Third half-year: German language, four hours; review and application of principles learned in algebra, planimetry, stereometry, and trigonometry, four hours; analysis and higher equations, two hours; analytical geometry, two hours; differential and integral calculus, four hours; physics, two hours; chemistry, two hours; technical mechanics, four hours; elementary machines, four hours; shadow and perspective drawing, three hours; drawing elementary machines, six hours; mill building (optional), two hours.

Fourth half-year: German language, two hours; analytical geometry, two hours; differential and integral calculus, four hours; electricity and magnetism, two hours; chemistry, two hours; technical mechanics, four hours; graphostatics, two hours; hydraulics, two hours; lifting and transporting machines and presses, four hours; steam-engines, four hours; chemical technology, two hours; principles of construction, two hours; drawing of lifting and transporting machines, three hours; drawing of buildings, three hours; mill building (optional), two hours.

Fifth half-year: German language, two hours; differential and integral calculus, two hours; electricity and magnetism, two hours; analytical mechanics, two hours; mechanical theory of heat, two hours; propellers and steering, four hours; steam-boilers, two hours; hydraulic motors, four hours; pumps, two hours; mechanical technology, two hours; laws of construction, two hours; drawing of propellers and steering apparatus, six hours; drawing of steam-boilers, three hours; drawing of pumps and water-wheels, three hours; drawing plans for buildings, three hours; field surveying and leveling, one afternoon.

Sixth half-year: German language, two hours; analytical mechanics, two hours; cinematics, two hours; theoretical principles of machinery, two hours; theory of regulators, two hours; electro-technic, four hours; locomotive construction, two hours; construction of tool machinery, two hours; small motors, two hours; designing and construction in civil engineering, two hours; estimation of costs, one hour; drawing of steam-engines, six hours; drawing of turbines, three hours.

Practical exercises: Sketching of indicators on steam-engines, one afternoon; measurement of power of machinery, one afternoon; hydrometrical exercises, one afternoon; field surveying and leveling, one afternoon.

At the end of the third and fifth half-year's course examinations of the students are held, and at the end of the full course a graduation examination. In addition to the studies enumerated students are recommended to take instruction in the French and English languages, and in geography and history. For each of the languages an extra charge of $5 a half-year is charged. The work-master's school is for young fellows who have learned what is generally acquired in the common schools up to a boy's fourteenth or fifteenth year; that is, to read, write, and cipher with ease, and who, after leaving school, have worked for at least two years in some factory or workshop, and wish to obtain the theoretical instruction which will fit them to be designers, master-workmen, bosses, superintendents, and the like. The course is a year and a half in length, and is divided into three terms, as follows, with the amount of time devoted weekly to each branch of study, namely:

First half-year: German language, four hours; arithmetic, two hours; algebra, six hours; planimetry, four hours; physics, two hours; elementary mechanics, two hours; drawing, six hours; geometrical drawing, three hours; descriptive geometry, three hours; drawings of machines, three hours; commercial law and single-entry book-keeping, one hour.

Second half-year: German language, two hours; algebra, six hours; planimetry, two hours; stereometry, two hours; trigonometry, four hours; physics, two hours; elementary mechanics, two hours; study of cohesion, four hours; elementary machines, four hours; drawing, three hours; descriptive geometry, two hours; drawing elementary machines, six hours; mill construction (voluntary), two hours.

Third half-year: German language, four hours; physics, two hours; mechanics, two hours; elementary machines, four hours; study of steam-engines, two hours; steam-boilers, two hours; tool machinery, two hours; mechanical technology, two hours; drawing elementary machines, six hours; designing of machinery and entire establishments, three hours; architecture, three hours; mill construction (voluntary), two hours.

Practical exercises: Sketching indicators on steam machinery, one afternoon; measurement of power of machinery, one afternoon; hydrometrical exercises, one afternoon; field surveying and leveling, one afternoon.

Students who intend to follow a special branch of machine work, such as locomotive building, electro-technic, and the like, and are able to show practical experience at it, are allowed, so far as the plan of studies of the work-master school permit of it, to participate in some of the studies in the first and second course of the engineer school.

In the work-masters' school students need attend only in winter, and can use the summer to work at their trades. The Technikum also provides instruction in the ordinary branches of common school education, so far as it does not conflict with their regular studies, for young men who, through disease, lack of means, or other circumstances, have been unable to prepare themselves to pass the examination prescribed by the German Government for those who wish to cut down their period of active military service from three years to one. It much prefers, however, that the student should have passed such an examination before coming to it.

The law here is that every young man of physical ability shall serve three years in the active army, but by passing a certain mental examination he is entitled to serve but one year; provided, further, that he furnishes his own uniform, etc. It is, therefore, the object of all parents of fair means to have their sons pass this examination, and thus cut off two years of military drudgery among the boors and blockheads; and the great end of a boy's ambition at school is to successfully undergo this examination. If this examination be not passed, no matter what the boy's station in life may be, he is compelled to pass three years in the army, I believe. The youth of the land are thus stimulated to diligence at their studies, and the entailment of their period of military service from three years to one is constantly held up to them as a reward for their industry. Not only is this mental spur very salutary in its effects, as the world well knows, but the one year of training in the army, or more, as it may be, does, in a great measure, for physical development what the school performs for the mind. With the army as a mainspring of action, robust bodies are needed to fill it, and the gymnasium is an inseparable part of school education in Germany. Young men serve with alacrity for one year in the army, and regard it as an excellent school for physical culture. It is the three years of service that is so objectionable, which bears heavily upon the laboring population, who have not the means and opportunity to fit themselves for the one-year grade.

To pass the examination to entitle him to serve but one year in the active army a young man must be well acquainted with his own tongue, and, besides, have a knowledge of two of the four foreign languages of Latin, Greek, French, and English, which two is left with him to decide. In the ancient languages he must know the leading rules and be able to translate readily an easy extract from the prose writers, Cæsar, Cicero, Livy, and Xenophon, as well as easy passages from the poets. In the modern languages he is expected to be able to pronounce words with correctness, have a knowledge of the leading grammatical rules, and be able to translate prose writings of moderate difficulty, such as, in French, Voltaire's Charles XII, Barthelémy's Voyage du Jeune Anacharsis, Fenelon's Telemaque, Michaud's Histoire des Croisades, Ségur's Histoire Universelle, and the like; and in English, Goldsmith's Vicar of Wakefield, Scott's Tales of a Grandfather, Irving's Sketch Book, and the like, and to translate German composition into English or French without any grave violations of spelling or grammatical structure. In geography he must have a knowledge of what is commonly taught under the three divisions of mathematical, physical, and political geography, including the leading railways and canals of Europe. He is required to have knowledge of general history, and is examined with respect to the history of the Greeks and Romans, the history of his own country, and the general history of the world, attention being paid not so much to his familiarity with dates as to his acquaintance with the general connection of events. In mathematics he has to be well acquainted with the rules of arithmetic, and in geometry have a knowledge of planimetry up to and including the principle of the circle, and in stereometry be grounded in the most important formulas. In physics he is required to be well posted as to the general properties of bodies, such as impenetrability, advisibility, porosity, weight, specific gravity, etc., and with the principles of heat, magnetism, and electricity. In chemistry he is examined, and in principles of physics, not above mentioned, only when he desires it in order to make up thereby for deficiencies in the branches generally employed in making the examination. Chemistry and higher physics are therefore used as substitutes. — MAYENCE, *June 15, 1888.*

JAS. HENRY SMITH,
Commercial Agent.

GEOLOGY OF HAMILTON, ONTARIO.

TERRACE CONSISTING OF CLAY, SANDS, AND GRAVELS.

A.—*Brick-clay.*

A glance at the geology of the district will show that nearly the whole of the clay and brick earth lies to the west of Burlington Heights or in Dundas Valley. This district is limited toward the southwest by a ridge of gravel stretching across the valley, almost parallel to Burlington Heights, in the vicinity of Dundas. On the eastern side of this gravel ridge, for a considerable distance, the district, although of a clayey nature, is too sandy to be of use for

brick-making purposes. This confines the district that is of absolute use in the brick industry to a space about 2 miles in the longest direction and 1½ miles at the widest. The depth of the clay varies from 6 to 8 feet. It is very generally underlaid by sand. The total amount of clay available for bricks may be roughly computed at about 20,000,000 cubic yards. The annual outputs of the various yards in the district amount to above 15,000,000 bricks, the whole of which is absorbed in Hamilton and the surrounding district.

The brick-clay lying on the eastern side of Burlington Heights is only of very limited extent, not more than 100 acres at most, and giving an estimated amount of available material of about 1,250,000 cubic yards, giving thus a total amount of brick-clay in the vicinity of Hamilton of 21,250,000 cubic yards. This estimate, from the broken nature of the district and somewhat irregular manner in which the clay is laid down, may be somewhat too high, and it may be safer to say that there are not more than 20,000,000 cubic yards, with an annual output of 15,000,000 bricks.

The red and blue clay lying upon the northern side of Dundas Marsh has not been utilized for brick-making, although there is no doubt it might be so used at a somewhat higher expense than the present price of bricks would warrant.

At Burlington drain-tiles and bricks are made out of a red-colored clay. In the county of Halton there is an extensive clay deposit from which bricks have been made. Within the last two years a small quantity of red bricks have been made out of a small bed of brownish-yellow clay on the 14th lot of the 6th concession of Barton. The bed is about 2 feet thick, resting upon blue clay. The deposit between is not large.

The whole of the bricks hitherto made in Hamilton are of a red color; but lately attempts have been made to manufacture a white brick out of the underlying blue Erie clay. There seems to be no reason why this enterprise should not be successful, as this clay is manufactured into white brick at Brantford, on the west, and Toronto, on the east. If found suitable at Hamilton it will add an enormous quantity of available material to the brick manufactures of the city, as the whole district is underlaid by it. The mode by which this blue clay is being brought into use is as follows: The clay is mixed with water until it is quite liquid and the pure clay floats. It is then ran off into tanks and allowed to settle into sufficient consistency, when it is made into brick in the usual manner.

B.— *Clay for sewer pipes.*

Only about 2 feet of clay lying upon the surface of the brick-clay district is considered fit for this purpose. The most of the material used by the Hamilton and Toronto Sewer Pipe Company consists of this bed of clay and the red clays interbedded between the blue clays lying to the north of Dundas Marsh in the town of West Flamboro. These red and blue clays are indurated, and have nearly the consistency of the red and blue shales of the Clinton and Medina formation, of which they are the washings. The blue clay is

reported by the manager of the company to be of no use. When the clay is first dug out of the pit it is very hard, but on being allowed free access to the air and damp it readily crumbles to a fine powder. It is afterwards ground and worked into a clay, which, being mixed with the clay from the brick field and a small proportion of a marly clay, found generally at the base of the brick beds, forms the material out of which the sewer pipes are made. The Medina red shales have been ground and worked into a clay and tried for the same purpose. They were found to answer the purpose equally as well as the other clays. It is almost impossible to estimate anything like an approximate quantity for this material, as it forms the underlying rock of the whole district, although very little of it is visible on the south side of Burlington Bay. Practically the only limit to its production will be the cost of clearing the overlaying clay, sand, and rock, so as to get at it.

How far this industry might be pushed in this neighborhood it is difficult to say, as the real drawback to it would be the finding of a sufficient market for the articles when manufactured. At present the Hamilton and Toronto Sewer Pipe Company is fully competent to supply the whole of the demand for this class of goods in western Canada.

An attempt is being made to manufacture terra-cotta ware from a similar clay in the neighborhood of Milton, in Halton County. Its operations will be watched with considerable interest by those interested in this class of manufactures. If successful at Milton there is no reason why it should not be successful at Hamilton. If not sufficiently free from impurities for terra cotta it may be utilized for a fine class of bricks.

C.—*Fire-clay.*

There is no fire-clay known in the district. Iron-founders use a blue clay in association with fire-brick for the purpose of lining their cupolas. Very little of it, however, is used for this purpose. This blue clay is mostly composed of the disintegrated blue shales of the Clinton formation washed down from the escarpment and deposited around the base in the shape of clay. It is reported as of a refractory nature, and answers the purpose for which it is used admirably. There is enough of this material for all purposes to which it is applied for many years to come. The other clays in the district are not of any known use to manufacturers. They are generally too calcareous, but form an excellent loam for agricultural purposes. Some of them, especially the marly ones, might, with care, be advantageously employed upon various soils.

D.—*Molding-sands.*

There are eight townships in the county of Wentworth—Barton, Glanford, Saltfleet, Binbrook, Ancaster, Beverly, West Flamboro, and East Flamboro—and, with the exception of Binbrook and Glanford, extensive deposits of brownish-yellow or orange-colored sand, suitable for molders, are to be found in every township. The largest deposits occur in Beverly, where extensive beds are being worked at present, and a good bed 2 or 3 feet thick is to be found on the 26th lot of the 8th concession. It also extends along the

western side of an extensive cedar swamp, forming with the underlying clay and gravel a high bluff bordering the marsh. In the townships of West Flamboro and East Flamboro beds of this sand are known to exist, and as the greater part of the soil of both townships is a sandy loam, probably molding-sands exist in more extensive quantities than we are aware of.

In Ancaster township only one bed of workable quantity is known. It is on the 54th lot of the 1st concession, quite close to the escarpment. A small bed about 6 inches in depth lies amongst the brick-clays near the marsh. It is probable these two deposits form nearly the whole of this class of sand in the township, as in other places where sand occurs it is of reddish or greyish hue, the grey consisting of fine silt and water-washed sand, and used with the red as a building sand. In Saltfleet this sand is only known towards the western margin of the township between the escarpment and the bay. As is the case in Barton township, it occurs in slight rolls immediately under the surface soil and in patches of generally small dimensions, varying from a few feet to a few yards in length and breadth and from 1 to 2 feet in thickness.

In Barton township it is only known to exist on the terrace between the escarpment and the bay. In East Hamilton it occurs in rolls similar to Saltfleet, but where found in Hamilton it is close to the water, and forms a high bluff varying from 5 to 15 or 20 feet in height. When of such height it is generally interstratified with thin laminæ of similarly colored clay.

At Port Nelson, in the township of Nelson, Halton County, about 12 miles north of Hamilton, there is an extensive deposit of this same class of sand. One or two peculiarities of this sand is worth noting. First, its affinity for clay. In all cases where found it is in close proximity to the clay, generally resting upon it, and is more or less mixed with it. In one sample the clay and sand were about equally divided, and in others they varied chiefly, however, in favor of sand. Second, its position among the other materials of the district. It is rarely found in beds, but generally in pockets, although the material found in the pockets is always stratified. It is apparently the latest addition to the elevation of the terrace or surface where found, as in all cases it lies immediately under the surface soil.

Of the origin of this sand there can be little doubt but it is the result of the washing down of the escarpment at a time when the terrace was at a lower level than at present and partly covered with water, and that the patches or depressions in which the sands were formed were pools in the shallow lake. Its tenacity, owing to the amount of clay contained in it, would, when the surface came under the influence of the air, prevent its being so readily washed away as the reddish clean sands, and so, in course of time, it would present the form of rolls, in which it now appears. All the low-lying deposits would apparently conform to this idea with the exception of the bluff overlooking the bay. Where this bluff is heaviest it lies upon the opposite sides of an inlet or natural-drainage course, and is very likely the results of a deposition of washings of clay and sand from the escarpment and the older deposits of yellowish sand. Where the gray band is visible some of the upper beds are sure to be stained with iron to a color nearly approximating the color of these

sands. In the neighborhood of Grimsby there are also banded shales showing similar tints. It must also be remembered that a great quantity of the material came from that direction, being carried down by the current, which, no doubt, in earlier times followed a course in the same direction as at the present day, although it would then be somewhat nearer the escarpment than at present. At that time the Burlington Beach, if above water at all, would not have attained the elevation it has now. More likely it would be so low as to be covered with water or so that the waves would wash over it, carrying with them the fine material of sand and clay, and at times disturbing the whole of the lagoon which the bar formed. Clay would also be brought down from the top of the escarpment by the streams, as well as washed down by the rain. This clay is of a brownish-white tint, and would naturally give this color to any deposits left by the water with which it came in contact.

The beds of Beverly are associated with a yellowish-brown clay, and are very likely the results of a rearrangement of the materials forming this clay when first deposited. Those in the upper part (western) of this township are surrounded by a marsh on the eastern side, and high hills of sharp sand and gravel to the west. The rock underlying this clay and sand belongs to the Guelph formation, which is made up principally of brown-whitish and buff-colored material.

Whatever may be the origin of these sands, there is no doubt as to their forming the latest addition to the soils of the district in which they lie. They are extensively used in Hamilton by the iron-founders, and some of them report them as being as good for their purposes as the imported sands from Albany, N. Y., and others. Brass-founders, however, prefer the Albany sand, as it gives a finer finish to their castings. Great quantities of these sands are exported to various points in Canada and the United States.

Sir William Logan (Geology of Canada, 1863, p. 800) classifies these sands as a fine quartzose sand, containing at the same time small quantities of argillaceous and ferruginous matter. Compared with the statement of Mr. G. Gladstone in his mining and quarrying article, "Iron" (Cassell's Technical Educator, p. 255), that molding-sand should be fine and even in quality and should consist principally of silica, with the addition of a little alumina, it would seem that the molding-sands of the Hamilton district should answer every purpose in the way of casting. Practical molders, however, say that the Hamilton sands do not admit of as fine a finish being put upon the castings as the Albany sand. This, however, may be remedied by improving the mode of preparing them for use in the foundry. That this might be the case, is the more forcibly brought out by a statement made by an experienced iron-molder that there were small quantities of sand in the neighborhood of Hamilton equal to the best imported sands, but as the care required to separate it from the other is so great that it will not pay to do so, the two classes are in every case mixed and sold together.

The quantity of molding-sand exported to the United States amounted to 4,056 tons for the fiscal year ending June 30, 1888. Molding-sands require

to be even in texture, fine and adhesive enough to retain the form of the mold, but at the same time to be sufficiently porous to absorb any moisture that may be generated by the intense heat of the casting.

E.—*Building sand.*

Enormous deposits of clean, clear, grayish and red-colored sand suitable for the manufacture of mortar exist throughout almost every township in the county. The chief supply for Hamilton is obtained in Barton and Saltfleet townships. At present great quantities of a gravelly sand is being used as a base upon which to lay the blocks used in paving the streets. This sand is obtained from the eastern end of the Burlington Heights and is overlaid by thick beds of hard pan and in some places by glacial débris, consisting of fragments of rock cemented together by a compact, hardened clay.

F.—*Gravels.*

Gravels of varying degrees of coarseness, from a sandy texture to good-sized pebbles, are to be found in various parts of the county. The most extensive beds are Burlington Heights, a gravel ridge extending across the valley near Dundas and Burlington Beach. Around the village of Ancaster there are numerous gravel pits, the produce of which has been used for road-making purposes, but not to any great extent.

Escarpments—Sandstones, Limestones, and Shales—Lime and Water-lime.

A.—*Sandstones.*

The Medina formation is rarely visible upon the southern side of Burlington Bay, but at Burlington village, on the northern side of the bay, it comes to the surface as red shales and sandstones. The stone readily yields to the weather, and is in consequence of no value from an economical point of view.

Lying on the top of the Medina there is a thickness of about 12 feet of a fine, close-grained sandstone known as the gray band. Where not stained with iron markings from the shales overlying, it forms a good building stone. The supply, however, must necessarily become exhausted, as, owing to its depth below the surface of the Clinton and Niagara beds, it will become too expensive to obtain. The last quarry of this stone is to be found in Chedoke ravine, to the west of Hamilton.

Many buildings in Hamilton have been erected with this sandstone, but it contained iron, which has weathered out and, owing to the action of the wet, has stained many of the walls with unsightly, rust-colored patches. In East Hamilton the gray band appears in the shape of a projection of about 12 feet jutting out from underneath the Clinton formation, and about 80 feet below the upper beds of the escarpment. At some points it is now being quarried for building purposes. This sandstone is also reputed to be good material for grindstones, but no such industry is carried on in Hamilton.

In the Clinton shales there are some thin beds of sandstones which, with thin accompanying limestones, are worked for building stones. As a rule, however, the cost of production is too great to admit of any extensive operations.

B. — *Limestones.*

It is in the Niagara formation that most of the building stones used in foundations and for other purposes around Hamilton are to be found. These are altogether limestone of various degrees of fineness and texture. These beds generally lie under a thickness of bluish shale, thinly-bedded limestones, and broken, thinly-bedded cherty limestones, the depth of which sometimes exceeds 30 feet. At the head of James street the overlying beds are over 40 feet in thickness; on Strongman's road, east of James street, they are about 30 feet, while at the crossing of the public road, about 2 miles from the village of Ancaster, there is about 20 feet of broken material overlying a good solid bed of 5 feet of limestone. At the head of James street the stone fit for building purposes is in three layers, the upper one of whitish-blue limestone and 5 feet in thickness. The other two are of a grayish, armacious limestone, 1 foot 3 inches and 1 to 8 inches in thickness.

At Ancaster the upper escarpment is quarried chiefly to supply the demand of that district. The quarries there are of a bluish-gray hue, weathering to a drab color. In one of the quarries in this district the stone has a tendency to weather into pits, while the other, which is somewhat lower in the formation, appears to retain its form and texture throughout. This last is a very fine building stone, and should railway facilities ever be granted to the village it will no doubt be in much greater demand than at present—the cost of carriage militating against its use.

At Beamsville there are extensive quarries of Niagara limestone, and at Waterdown the same stone is also quarried for building purposes.

The same remarks regarding the cost of quarrying in the immediate vicinity of Hamilton apply to the limestones as well as the sandstones. Until a greater demand for building stone takes place it will not pay to go so deep as the best of these stones lie.

C. — *Building lime.*

Most of the lime used in the neighborhood is obtained by burning the limestones of the upper escarpment, the chief places being at Limeridge, 2 miles south of Hamilton, and at Ancaster village. At both places the stone burns to a good white lime, very free from waste. Lime is also obtained from the Guelph beds at Troy, in Beverly township, and at Dundas, in West Flamboro, from the Niagara. The extent of these beds is sufficient to supply this district for a long time to come.

D. — *Water-lime.*

Out of a bluish-gray, nearly brown argillaceous limestone, lying near the top of the Niagara formation, a strong water-lime is being made. It is probably as good, if not stronger, than the Thorold water-lime, but as it is only of a recent production, and the proprietors not having made any par-

ticular efforts to push its sale, it is as yet little known among the class requiring such material. It is used by the city of Hamilton in their sewerage, and very well spoken of by the city engineer as well as by Mr. K. Tully, C. E., of Toronto, to whom samples had been sent for inspection. Although established only eight or nine months, the proprietors expect to sell about 1,200 barrels before the end of the year. Next year it is the intention to put in a larger mill and push sales more vigorously. The stone is at present obtained from a quarry about 5 miles southeast of Hamilton, and consists of a series of thin layers, reaching a total of 18 feet in thickness. The estimated quantity of material now in view is about 13,000,000 barrels. In addition to this there are extensive beds of suitable material among the beds of the Niagara, throughout the whole of the escarpment.

F.—*Shales.*

The red shales, belonging to the Medina formation, have been experimented upon with the view of testing their capabilities for the manufacture of sewer pipes, and, as already stated, have been found to answer that purpose. Out of the disintegrated blue shales belonging to the Clinton and Niagara a sort of fire-clay has been made and used for the purpose of liming the cupolas of the iron-foundries of the city.—HAMILTON, ONT., *July 26, 1888.*

ALBERT ROBERTS,
Consul.

RAILROAD IN PERSIA.

According to the Moscow papers of to-day the first line of railway in Persia will be opened between the $\frac{8}{20}$th of this month. It has been constructed by a Belgian company, and extends from Teheran to Shag-Abdul Azima, a distance of about 10 miles.

The construction of this line was surrounded by enormous difficulties, arising chiefly from the transport of material into Persia. Each mile cost nearly $36,000, and the whole line cost more than $400,000. The larger portion of the material was brought through the Caucasus and Russia from Belgium, and the duty paid amounted to $40,000.

At the opening ceremony His Highness the Shah of Persia will be present. A very elegant car has been specially built for him.

It may be taken for granted that this short section of railway can not possibly pay the company, but the question of securing concessions for the construction of the entire line from the Persian Gulf to the Caspian Sea is conditioned on the success of this portion of the railway.

The whole line would be about 730 miles in length, and its importance to Persia as well as to Russia is incalculable. The Persians themselves hail with delight the opening of this first railway in their country.—Moscow, *June 4–16, 1888.*

N. W. HORNSTEDT,
Acting Consul.

31071

REPORTS

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WEIGHTS, MEASURES, AND CURRENCY MENTIONED IN THESE REPORTS.

Name.	Country.	U. S. equivalent.
Anna	India	3 cents.
Centimeter (cubic)		0.0610 inch.
Franc	France	19.3 cents.
Hectoliter		26.417 gallons.
Kilogram		2.204 pounds.
Kilometer		3,280.899 feet.
Kroner		$0.268.
Liter		1.0567 quarts.
Mark	Germany	24 cents.
Maund	India	82 pounds.
Millimeter		0.0393 inch.
Milreis	Portugal	$1.084.
Piastre	Turkey	$0.0442.
Picul	China	133.35 pounds.
Pound	Great Britain	$4.86.
Rupee	India	33.2 cents.
Taël	China	$1.30.
Taël (haikevan)	....do	$1.20.
Yen	Japan	$0.81.

CONSULAR REPORTS

ON

COMMERCE, MANUFACTURES, ETC.

No. 96.—AUGUST, 1888.

SUGAR LAWS IN GERMANY AND AUSTRIA-HUNGARY.

In dispatch No. 271, dated July 26, 1887, sent from this consulate-general, the following was reported with regard to German tax on sugar:

"Although by an act approved June 1, 1886, a new classification of sugar and a new method of collecting tax on beet sugar, equaling a reduction of export bounties, was introduced, this act has just been superseded by act of July 9, 1887, to take force and effect on August 1, 1888.

"Section 1 of this new act provides that from and after this date the following rates of import duties shall be collected per 100 kilograms: (1) On sirup and molasses, 15 marks = $3.57; (2) on other sugar of every description, 30 marks = $7.14.

"If foreign sugar is consigned to a German sugar factory to be worked further there, the same may, subject to special orders of the federal council, be exempted from the tax of consumption (excise) [hereafter described].

"Section 2 provides that the internal beet sugar shall be subject to a sugar tax, to be collected (1) as 'material tax' [*material steuer*] on the weight of the raw beets intended for the manufacture of sugar, viz, 80 pfennigs (19 cents) per 100 kilograms; (2) as excise (tax of consumption) on the weight of sugar intended for home consumption, viz, 12 marks ($2.85) per 100 kilograms. This 'material tax' shall be paid by the manufacturer, while the excise shall be paid upon sugar leaving the bonded sugar works or refineries for home consumption.

"Bounties shall be paid—in case of exportation of at least 500 kilograms—for every 100 kilograms, (*a*) for raw sugar containing at least 90 per cent. sugar, and for refined sugar containing less than 98 but at least 90 per cent.

sugar, 8.50 marks ($2.02); (*b*) for candy and for sugar in white, full, solid loaves, lumps, tablets, cubes, etc., containing at least 99½ per cent. sugar, 10.55 marks ($2.51); (*c*) for all other hard sugar, not otherwise provided for, as well as for all white dry sugar, containing not more than 1 per cent. water, in crystals, pulverized, etc., containing at least 98 per cent. sugar, 10 marks ($2.38)."

Also in Austria-Hungary a new sugar law went into effect on the 20th of June last. Both this and the German sugar laws are said to have many congruent features, although they differ considerably in several other respects.

The new laws of the German Empire, as well as those of Austria-Hungary, are subjected to much criticism. It is obvious that both are chiefly intended to increase the revenues of the respective governments by subjecting sugar to an excise or tax of consumption. The tax is to be collected in both countries from all kinds of sugar, irrespective of quality, simply by weight, viz, per 100 kilograms: In the German Empire, 12 marks ($2.85); in Austria-Hungary, 11 marks ($2.61).

Both countries retain the export bounty (the efforts of the late sugar conference in London to abolish bounties notwithstanding), evidently for the purpose of guarding against the competition of other nations, especially France, which has become a large sugar-producing rival. A well-informed paper (Die Deutsche Zucker-Industrie, Berlin) says, in referring to the new laws of Germany and Austria-Hungary:

The modes adopted by both countries differ in their application, though their object is the same. The German Empire retains the beet-tax system, with its implicit bounty, by a higher rating of the drawback, but reduces at the same time the tax on beets from 1.70 marks ($0.40) to 80 pfennigs ($0.19), thus lowering correspondingly the present export bounty; while Austria-Hungary frankly allows an export bounty, evading the dual system of taxing one and the same product twice, thus saving much vexation to manufacturers.

In rating the drawback and the export bounty the single-weight system has been abandoned, and a classification is made according to quality, which does not coincide in the two countries.

In Germany the export bounty per 100 kilograms amounts to—

	Marks.	Dollars.
1. For sugar containing at least 90 per cent. sugar	8.50	=2.02
2. For sugar containing at least 98 per cent. sugar	10.00	=2.38
3. For sugar containing at least 99½ per cent. sugar	10.55	=2.51

Austria-Hungary allows in case of exportation:

	Florins.	Marks.	Dollars.
1. For sugar of at least 88 per cent. polarization	1.50	=2.44	=0.58
2. For sugar of at least 93 per cent. polarization	1.60	=2.60	=0.61
3. For sugar of at least 99½ per cent. polarization	2.30	=3.75	=0.89

For a comparison between the two countries we must confine ourselves, as for Germany, to classes 1 and 3, and as for Austria-Hungary, to classes 2 and 3, as constituting the bulk of production. For 100 kilograms of raw sugar, for instance, the Austria-Hungarian manufacturer, when exporting such sugar, receives a bounty of 2.60 marks ($0.61), which amount must be paid to him also by the domestic refiner, otherwise the manufacturer would not sell to him. This bounty works like an increase of the price in the world's market by 2.60 marks ($0.61). The manufacturer, therefore, endeavors to produce as cheaply as possible, to pocket the entire bounty whenever the world's market price covers his cost of production. The German com-

petitor, to secure the same amount of bounty, will be compelled to produce a meter centner (50 kilograms) of raw sugar from an amount of beets as low as 7⅓ (precisely, 7.375) meter centners. Most manufacturers will hardly be able to do so without working up molasses, but the latter increases working expenses considerably per meter centner (50 kilograms), and by these additional expenses the profit of the German manufacturer is diminished. Moreover, he produces a sugar which commands a lower price in the market than sugar manufactured by factories not working molasses. Further, such sugar, especially such as is obtained by means of the *steontianite* (or elimination) process, is liable to the suspicion of the German excise officials, who subject it to a close examination which, under circumstances, may conduce to a refusal of any bounty whatever, and to a classing of the product with an inferior quality of sugar.

Section 41 of the regulations to carry out the German sugar act of July 9, 1887, says:

"The ascertaining of the contents of sugar by means of a chemical analysis shall be required, if there is reason to believe that the sugar to be taxed contains over-polarizing component parts (raffinose, etc.) in quantities comparatively more considerable than is the case with sugars obtained from molasses, especially by way of the *steontianite* (or elimination) process."

The paper from which the foregoing is an extract comes to the conclusion that in Germany, as well as in Austria-Hungary, the new sugar-tax laws will cause much vexation. All factories are to be severely watched, so that no sugar produced and remaining in the respective countries escapes the consumer's tax. In Austria-Hungary stamps are to be attached to all sugar produced at the time the same leaves the factory or enters the public stores. Dealers in sugar are held co-responsible in convincing themselves that the stamp is properly attached whenever they purchase sugar for retailing purposes.

Considerable interest is manifested in watching the effect of the new laws. Doubtless governmental revenues will be increased in both countries, but in industrial circles it is apprehended that the results will not be favorable to a further development of the sugar industry.—BERLIN, *July 20, 1888.*

F. RAINE,
Consul-General.

CORN LAWS OF PORTUGAL.

[Transmitted by Vice Consul-General Wilbor.—Translation.]

Dom Luiz, by the grace of God King of Portugal and of the Algarves, etc. We make it known to all our subjects that the general Côrtes decree as follows:

ARTICLE 1. The duties fixed in the general tariff of the custom-house for cereals and corresponding flour, as well as horse-beans, are modified in the following terms:

	Reis per kilo.
Wheat in grain	20
Indian corn in grain	16
Cereals in grain not specified	15
Flour of cereals	30
Horse-beans	14

SEC. 1. The Government is authorized to raise these duties sufficient to compensate for the bounties of exportation that may be granted in the exporting countries.

SEC. 2. The Government is also authorized, after hearing the superior council of commerce and agriculture, to reduce the duty on flour of wheat, corn, and rye, when that may be needed to avert an increase in the price of bread or of any alimentary product of cereals, being able also, when that is not enough, to lower simultaneously and in proportion the duties on cereals in grain and respective flours.

SEC. 3. In the terms of the preceding paragraph the Government is yet authorized to diminish to 25 reis the duty on wheat flour when in the Lisbon market the price of soft wheat will be at less than 580 reis for 10 kilograms, and of the regular hard wheat lower than 550 reis also for 10 kilograms.

SEC. 4. The Government will help the furnishing of municipal bakeries in Lisbon, Oporto, and other important populations, granting them —

1. National buildings to establish bakeries therein.

2. Importation free from duties on machines and utensils necessary for baking.

ART. 2. The Government will grant importation free from duties to machines and grinding utensils, bolting and baking, destined to the panification and employment of national wheat.

The Government will also grant exemption from industrial contribution for ten years to grinding manufactures, to water or wind mills, which only grind Portuguese cereals.

ART. 3. In the Government railway the tariff for the transportation of wheat, corn, and flour shall be established in a way that the proportion between the unities for cereals in grain and flour shall never be greater than the proportion of 3 to 4.

SEC. 1. The Government will negotiate with private railway companies to obtain tariffs on similar terms.

SEC. 2. The Government will not be able to approve new general or special tariffs in which the same terms be not maintained.

ART. 4. The Government is authorized to establish in the extinct convent of the Carmelites, or on other proper locality on the right side of the Tagus, grinding manufactures of panification and crackers, deposits, store-houses, barns, and stables, according to the plans proposed by the committee appointed by the decree of June 30, 1886. The Government is also authorized to build, when convenient, in the suburbs of the city of Oporto, a similar establishment for the preparation of corn, rye, or mixed bread.

SEC. 1. The establishments spoken of in this article shall furnish the army, navy, corporations, and establishments depending on the home, justice, war, and marine ministries, using as much as possible corn and rye in the alimentation of the northern troops; and may also sell the flour to the municipal bakeries and the public.

SEC. 2. For creating this establishment in Lisbon, and its branch in Oporto, the Government is authorized to spend 60,000$000 reis per annum during eleven years, doing the work and getting materials by contract, according to the regulations of the public administration, and being able to raise by means which it may judge the most convenient, without going beyond the sum fixed in this paragraph, the amount necessary for the rapid installation of the establishment.

SEC. 3. The establishment spoken of in this article shall use national cereals, except in case of *force majore*.

Dated at the Palace July 19, 1888.

THE KING.

TARIFF REVISION IN SWEDEN.

The protective party having lately come into power in the Swedish Diet, a large number of important changes have been made in the customs duties, greatly increasing them, and thus inaugurating what is spoken of here as the "new system." After imposing a high duty on breadstuffs early in this year, the entire tariff was revised, the late changes coming into effect on July 1, 1888.

The following list shows the articles upon which the duty has been increased, with the old and new rates of the same:

	From. Kr. Ore.	To. Kr. Ore.
Accordeons, per kilogram	0 50	1 00
Acid, sulphuric, per kilogram		0 00½
Albums, per kilogram	1 00	2 00
Alum, per 100 kilograms		1 25
Basket work, fine, per kilogram	0 60	1 00
Blacking, shoe, etc., per kilogram	0 05	0 15
Books, printed in Swedish language, bound in paper or cloth, per kilogram	0 25	0 50
printed, all others, per kilogram		2 00
blank, per kilogram	0 20	0 25
covers	0 60	1 00
Brandy and spirits, in barrels, of potatoes or other vegetables, per liter	0 60	0 75
rice, per liter	0 60	0 75
sugar, etc., per liter	0 60	0 75
grape, of French manufacture and directly imported, per liter	0 45	0 55½
grape, otherwise manufactured or imported, per liter	0 50	0 75
of other fruit, per liter	0 50	0 75
all not specified, per liter	0 90	1 11
Bread, fine, cakes, etc., per kilogram	0 15	0 30
all other, per kilogram		0 04 8/10
Breadstuffs, wheat, rye, corn, barley, per 100 kilograms		2 50
oats, per 100 kilograms		1 00
malt, per 100 kilograms		3 00
all other, per 100 kilograms		2 50
ground, bran, per 100 kilograms		0 30
ground, vegetable meals, per 100 kilograms		4 30
ground, groats and meal, per 100 kilograms		4 30
Brushes, of unpolished or unpainted wood, per kilogram	0 10	0 12
Butter, including artificial, per kilogram		0 20
Caviare, per kilogram	1 80	2 50
Cement, per 100 kilograms		0 20
Chalk, ground, etc., per 100 kilograms	0 00½	1 00
Cheese, per kilogram	0 07	0 20
Chestnuts, per kilogram	0 15	0 25
Cigars and cigarettes, per kilogram	3 00	4 00
Cordage, per kilogram		0 10
Ethers, per liter	1 40	1 75
Fancy goods, per kilogram	0 80	2 00
Fans, per kilogram	1 20	5 00
Flowers, natural	0 30	2 00
Furs, sewed and made up, finer varieties, per kilogram	*2 40	4 00
sewed and made up, common varieties, per kilogram	*0 25	2 00
Furniture, pine, spruce, etc., unpainted, per kilogram	0 02	0 05
pine, spruce, etc., painted and varnished, per kilogram	0 04	0 10
ash, birch, oak, and other native woods, per kilogram	0 08	0 30
walnut, mahogany, and other foreign woods, per kilogram	0 15	0 60

* And 20 per cent.

	From. Kr.	Ore.	To. Kr.	Ore.
Glass, jars, bottles, etc., light-green and half-white, per kilogram	0	02	0	06
ports for vessels, per kilogram			0	07
powdered, per kilogram			0	02
Glue, per kilogram	0	10	0	20
Guns and finished parts of same, per kilogram	0	50	1	50
Ink, per kilogram	0	06	0	10
Iron and steel, pig and cast, per 100 kilograms			2	00
beam, angle, etc., weighing less than 20 kilograms per meter, per 100 kilograms			2	50
rolled and wrought bar, etc., per 100 kilograms			2	50
railroad fish-plates, bolts, and spikes, per 100 kilograms			6	00
plate, roller, or wrought, of 3 millimeters or over thick, per 100 kilograms			3	00
plate, roller, or wrought, of less than 3 millimeters thick, per 100 kilograms			4	00
plate, roller, or wrought, ground, polished, or galvanized, per 100 kilograms			6	00
anchors, etc., per 100 kilograms			4	00
chains, 25 millimeters or over in diameter, per 100 kilograms			3	50
chains, 6 to 25 millimeters in diameter, per 100 kilograms			7	00
chains, under 6 millimeters in diameter, per 100 kilograms	0	10	10	00
spikes and nails, 45 millimeters or over in diameter, per kilogram	0	03	0	04
screws, 75 millimeters or over in diameter, per kilogram			0	20
screws, less than 75 millimeters in diameter, per kilogram			0	30
railroad materials not specified, per 100 kroners			10	00
Lard or fat, per kilogram			0	20
Liqueurs, per liter	1	20	1	50
Live stock, horses over one year old, each			50	00
cattle, each			10	00
sheep, each			1	00
hogs, per kilogram			0	15
Maps and charts, Swedish text, printed abroad, per kilogram			1	50
Swedish text, printed abroad, mounted and bound, per kilogram			2	00
Masks, each	0	25	0	50
Meats, fowls, all kinds, per kilogram			0	20
other kinds, per kilogram			0	07
Music, bound, per kilogram			1	00
boxes, per kilogram	2	00	3	00
Mussels and oysters, per kilogram	0	05	0	10
Oils, volatile, per kilogram	1	00	2	00
not volatile, in other vessels than barrels, per kilogram	0	02	0	05
Organs and melodeons, per 100 kroners	5	00	15	00
barrel, each	1	00	10	00
Paints, in boxes or tubes, per kilogram	0	80	1	50
Perfumeries, per kilogram	1	00	2	00
Pianos, each	60	00	150	00
grand, each	100	00	200	00

1 kroner = $0.268 1 kroner = 100 öre

	From. Kr.	Ore.	To. Kr.	Ore.
Pitch, per 100 kilograms			2	00
Plaster, burnt and ground, per 100 kilograms			0	40
worked, per kilogram	0	10	0	20
Pork, smoked, per kilogram			0	25
all other, per kilogram			0	20
Potatoes, per 100 kilograms			0	50
Prunes, dry, per kilogram	0	20	0	50
Rice and paddy, per 100 kilograms			2	50
Sausage, per kilogram	0	25	0	50
Seed, timothy, per kilogram			0	05
garden, per kilogram			0	50
Shoe-lasts, per kilogram			0	10
Shot, per kilogram	0	07	0	10
Sprinklers, per 100 kroner	5	00	10	00
Starch, per kilogram	0	10	0	17
Toys, wooden, per kilogram	1	50	2	00
Type, etc., per kilogram			0	25
Vessels and boats, per 100 kroners			10	00
Wax, per kilogram			0	15
Wire, iron and steel, 1½ millimeters and over thick, per kilogram			0	04
less than 1½ millimeters thick, per kilogram			0	08
Woven goods, jute, unbleached and undyed, per kilogram			0	10
hair, per kilogram			0	25
Yarn, cotton, double and many threaded, per kilogram			0	20
cotton, double and many threaded, dyed and printed, per kilogram			0	35
jute, dyed, bleached, and printed, per kilogram			0	18
canvas and twine, sized, dyed, etc., per kilogram	0	20	0	40
Yeast, per kilogram			0	20
All goods not specified, more or less manufacturing, per 100 kroners	10	00	15	00

The following list shows the few articles upon which the duty has been decreased, with the old and new rates of the same:

	From. Kr.	Ore.	To. Kr.	Ore.
Aniline colors, after January 1, 1889, per 100 kroners	5	00		
Coffee, raw, after January 1, 1889, per kilogram	0	26	0	12
roasted, after January 1, 1889, per kilogram	0	35	0	20
Oils, not volatile, excepting linseed, by the barrel, after January, 1, 1889, per kilogram	0	07		
refined petroleum and naphtha, after January 1, 1889, per kilogram	0	02		
Tea, after January 1, 1889, per kilogram	0	80	0	50
Furs, undressed, fine varieties, per kilogram	2	40		
undressed, common varieties, per kilogram	0	50		
dressed, fine varieties, per kilogram	*2	40	0	50
Vinegar, after January 1, 1889, per kilogram	0	20	0	10
Yarn, jute, undyed and unbleached, per kilogram	0	10	0	06

GOTHENBURG, *July 26, 1888.*

ERNEST A. MAN,
Consul.

* And 20 per cent.

THE SWISS PATENT LAW.

Switzerland has now followed the example of the other civilized nations of the world in adopting a law for the protection of inventions. As this legislation contains several new and extremely interesting provisions, its text is given below, although it can not go into effect until it has been decided whether a submission to the people will be demanded by the petitions of 30,000 voters, and, in the latter case, until it has been approved by a majority of voters. A period of at least three months will be necessary for fulfilling these formalities. It will be particularly noticeable to persons interested in the subject that only material objects and *not* processes are protected by this law. This feature is said to be due to the efforts of the manufacturers of aniline colors and chemicals whose interests would be injuriously affected by a law as comprehensive as that of the United States, for instance, which protects "useful arts" and "compositions of matter" as well as tools and machines.

GENERAL PROVISIONS.

ARTICLE 1. The Swiss Confederation grants under the form of a patent the rights mentioned in this law to the authors of new inventions, or to their heirs and assigns, which are industrially applicable and which can be represented by a model.

ART. 2. Inventions are not to be regarded as new which, at the time a patent is applied for, have already become so well known in Switzerland that they could be executed and employed by specialists.

ART. 3. No one shall be permitted, without permission of the inventor, to construct the patented article or carry on business with it. If said article be a tool, machine, or apparatus, its use is also forbidden except by permission of the owner of the patent. Such permission is presumed when the patented article is offered for sale without any limiting conditions.

ART. 4. The provisions of the previous article are not applicable to persons who have already used or have made the necessary arrangements for using the article at the time of the application for a patent.

ART. 5. A patent is transferable by inheritance, by entire or partial assignment or mortgage, or by a license authorizing a third party to employ it. Transfers and licenses are valid with respect to third parties only when registered according to article 19 of this law.

ART. 6. The duration of the patent is fifteen years, reckoned from the date of the application. For each patent a fixed fee of 20 francs must be paid, and a progressive annual fee, as follows: For the first year, 20 francs; second year, 30 francs; third year, 40 francs; and so on till the fifteenth year, when the fee amounts to 160 francs. This annual fee is due in advance, and payable on the first day of each year for which the patent is in force. The owner of the patent may also pay in advance for several years; if he abandons the patent before the expiration of the period for which he has paid, the yearly payments not yet due will be refunded to him.

ART. 7. The proprietor of a patent who introduces an improvement on the invention protected by the same is entitled to a supplementary patent, expiring at the same time with the principal one, on payment of a single fee of 20 francs.

ART. 8. A delay in the payment of the first three annual fees till the beginning of the fourth year may be granted to a resident of Switzerland who is proved to be without means. If he then abandon his patent the fees due will be remitted.

ART. 9. An acquired patent expires —

(1) When the owner notifies the federal patent office in writing that he abandons it.

(2) When an annual fee is not paid, at latest, three months after it becomes due, the patent office will in each case, but without assuming any responsibility, at once notify the owner when the annual fee falls due.

(3) When the invention has not been brought into use at the expiration of the third year from the date of the application for a patent.

(4) When the patented object is introduced into Switzerland from abroad, and the owner of the patent has at the same time rejected Swiss application for a license based on cheaper prices.

In the two last cases any person proving a legal interest may bring suit for forfeiture of the patent before the court competent in cases of infringement (article 30).

ART. 10. An acquired patent shall be declared null —

(1) If the invention is not new or not industrially valuable.

(2) If the owner of the patent is not the inventor or the latter's lawful successor; but the person taking out the patent is presumed to be the inventor until the contrary is proved.

(3) If the name given to the invention in the application indicated other than the real object of the invention, whereby it was the intention of the applicant to deceive others.

(4) If the representation of the invention (description and drawings) accompanying the application is insufficient to enable experts to carry the same into operation, or does not correspond with the model.

Any person proving a lawful interest may bring suit before a competent tribunal for the nullification of the patent.

ART. 11. A non-resident of Switzerland is entitled to acquire a patent and the rights attached thereto only when he has an authorized agent in the country. The latter is authorized to represent his principal in the proceedings under the law and in the legal controversies arising from them. Jurisdiction of complaints against the owner of the patent belongs to the tribunal where such representative has his domicil, or, if he has no domicil, to the court where the patent office is established.

ART. 12. The owner of a patent for an invention which can not be utilized without making use of a previous invention may require a license from the owner of such earlier invention when three years have elapsed since application for a patent for the same was made, and when it is of considerable industrial importance. If the license be granted, the owner of the earlier patent may, in his turn, require a license authorizing him to make use of the later invention, on condition, however, that the latter has an actual relation to the earlier one. The federal court has jurisdiction of controversies and determines the indemnity or security to be given.

ART. 13. If the public interest requires it, the federal legislature may, on proposition of the federal council or of a cantonal government, declare the expropriation of a patent at the expense of the Confederation, or of a canton. A decree of the Government shall determine whether the invention shall remain the exclusive property of the Confederation, or whether it shall become a common possession.

The federal court fixes the indemnity to be paid to the owner of the patent.

II. — APPLICATIONS AND GRANTS.

ART. 14. Whoever will acquire a patent must transmit to the patent office an application drawn up in conformity with an appropriate formula and having reference solely to the principal object and the details belonging thereto. The title employed must indicate clearly and precisely the essential character of the invented object. The application must be accompanied by —

(1) A description of the invention, which must concisely indicate in a special paragraph the essential characteristics of the same.

(2) Drawings necessary for the proper understanding of the description.

(3) Proof that a model of the article or the article itself exists. The object itself or a material representation of it which clearly shows its essential character may serve as model.

(4) The sum of 40 francs as fixed and first annual fee (article 6).

(5) A list of the papers and objects transmitted.

The application and other documents must be in the French, German, or Italian language. In case the application is rejected the annual fee is returned, together with all the papers, to the person sending them.

ART. 15. The federal council may require the deposit of models for certain classes of inventions.

For the execution of this and the previous article the federal council shall issue rules and regulations which in particular shall contain more detailed provisions in regard to the requirements of paragraph 3 of article 14.

ART. 16. A provisional patent is issued to an applicant on his fulfilling the requirements of paragraphs 1, 2, 4, and 5 of article 14. This provisional patent secures to its possessor, for the period of two years from the date of the application, the right to a full patent, whether the invention has meantime acquired publicity or not. The owner is not, however, entitled to sue for infringement or use of the invention. Before the expiration of the two years he must acquire a final patent by furnishing the proof required by paragraph 3 of article 14; otherwise the provisional patent becomes void. The final patent is not retroactive. Its duration is reckoned from the date of the provisional patent.

ART. 17. Every application in which the conditions prescribed by articles 14, 15, and 16 are not fulfilled shall be rejected by the patent office. An appeal from such a decision lies, within four days, to the executive department, under whose charge the patent office is placed.

If, for one of the reasons mentioned in article 10, the patent office regards an invention as not patentable, the applicant shall be confidentially notified of the decision, and he may then maintain, withdraw, or modify his application.

ART. 18. A full or provisional patent, application for which has been made in the proper manner, shall be at once issued on the responsibility of the applicant and without guaranty of the existence, the novelty, or the utility of the invention.

The patent office issues to the applicant a certificate attesting the fulfillment of the prescribed conditions to which duplicates of the description and drawings mentioned in article 14 are to be attached, and this certificate constitutes the patent of invention, temporary or final, as the case may be.

ART. 19. The patent office keeps a register which embraces the following details: The subject of the patent granted; name and residence of owners and of their authorized agents; dates of application and of furnishing proof of existence of model; all changes bearing upon the existence, ownership, or enjoyment of the patent. Judicial or legal decisions in regard to extinction, nullity, and expropriation of patents, and to the granting of licenses, are to be registered at the request of the prevailing party.

ART. 20. Every owner of a final patent is required to mark the articles produced in accordance therewith, in a conspicuous place, with the cross of the Swiss Confederation and the number of the patent. Where, owing to the nature of the article, this is not possible, the mark may be placed on the packages. By omitting the marking the owner forfeits his right to sue for infringement.

ART. 21. The owner of a full patent may require that the persons mentioned in article 4 also mark their products with the cross and number.

ART. 22. All persons may receive information, written or verbal, in regard to the contents of the register, and the federal council may prescribe a moderate fee therefor.

ART. 23. The titles of temporary or final patents, with their numbers and the names and residences of the owners and authorized agents, shall be published by the patent office immediately after the granting of the patents.

The patent office gives notice in the same manner of the extinction and of changes having reference to the ownership of patents. Moreover, the office publishes and delivers at a

moderate price the descriptions and drawings accompanying the applications. This publication is distributed gratis to the executive departments, the federal court, the cantonal governments for the especial use of courts having jurisdiction of cases of infringement, the higher institutions of learning, and to the industrial museums of Switzerland. It will also be exchanged for similar publications of other countries.

In order to enable the inventor to obtain a patent in foreign countries the publication may, at his request, be deferred six months; but in this case the owner has no legal remedy against infringements until after the publication takes place.

III. — INFRINGEMENT.

ART. 24. A civil or criminal action lies against—

(1) Whoever imitates patented articles or makes use of them without permission.

(2) Whoever sells, offers for sale, puts in circulation, or imports the imitated articles.

(3) Whoever knowingly co-operates in such proceedings or promotes and facilitates them.

(4) Whoever refuses to disclose the origin of imitated articles found in his possession.

ART. 25. Whoever deliberately commits an act mentioned in the previous article shall be condemned to pay an indemnity, and in addition a fine of 30 to 2,000 francs, or to imprisonment from three days to one year, or to fine and imprisonment within the limits mentioned.

For repetition of the offense these penalties may be increased to a maximum of double those for the first offense. Simple violation of the law through negligence is not punishable; but the indemnity is reserved in cases mentioned in article 24.

ART. 26. Any person proving a legal interest may begin a civil suit under the law. Criminal proceedings take place exclusively on complaint of the injured party, according to the criminal procedure of the canton where the prosecution is set on foot, which may be either that of the defendant's domicil or that in which the offense is committed. No offense shall be twice prosecuted.

No action lies after two years from the commission of the offense.

ART. 27. Upon commencement of either a civil or criminal suit the courts may take such precautionary measures as they deem necessary. They may, in particular, on production of the patent, require a more exact description of the alleged imitated articles, as well as of the tools and apparatus exclusively used in their production, and, if necessary, the seizure of the articles, tools, and apparatus mentioned.

If reasons for a seizure exist the plaintiff may be required to give security before it takes place.

ART. 28. The court may order the confiscation of the objects seized of sufficient value to pay the indemnity adjudged the plaintiff and the fine.

Even in case of acquittal it shall, when necessary, order the destruction of the tools and apparatus exclusively used for purposes of imitation.

It may order the publication of its decision in one or several journals at the expense of the person condemned.

ART. 29. Whoever unlawfully affixes to his business papers, advertisements, or products a designation calculated to produce the erroneous belief that a patent exists shall be condemned, *ex officio* or on complaint, to a fine of 30 to 500 francs, or to three days' to three months' imprisonment, or both, with the double of these penalties as a maximum for repeated offenses.

ART. 30. The cantons are required to determine the seat of a tribunal for civil proceedings under this act, the same having exclusive cantonal jurisdiction.

Appeal lies to the federal court, without regard to the amount in controversy.

ART. 31. The proceeds of fines go to the respective cantonal treasuries.

In case of the non-payment of a fine, the judge shall fix a period of imprisonment in lieu thereof.

IV. — MISCELLANEOUS AND FINAL PROVISIONS.

ART. 32. Citizens of countries which have concluded with Switzerland an arrangement to that effect may, within seven months from the date of a patent application in one of said countries, make an application in Switzerland without prejudice to said application on account of circumstances occurring meantime, such as another's application having been made or the inventions having acquired publicity.

Like rights will be secured to Swiss citizens applying for patents in said countries.

ART. 33. To every inventor of a patentable article exhibited in a Swiss national or international exhibition, protection will be granted for the space of six months from the date of the reception of the article for exhibition, on compliance with the formalities prescribed by the federal council.

When an international exhibition takes place in a country with which Switzerland has concluded an arrangement to that effect, the protection which is secured by the foreign country to a patentable article exhibited there shall extend to Switzerland; but this protection shall not continue more than six months from the date of the reception of the article for exhibition, and shall have the effect described in the foregoing paragraph.

ART. 34. The surplus income of the patent office shall be employed first in founding technical libraries in the industrial centers of Switzerland and in the effective distribution of the publications of said office, and, in the second place, for the promotion of the investigations prescribed in paragraph 2 of article 17.

ART. 35. The federal council is authorized to issue rules and regulations for the execution of this law.

ART. 36. The present law annuls regulations for the protection of inventions already in force in the cantons.

Inventions protected by local legislation at the time this law goes into effect enjoy such protection in the canton in question till the expiration of the period fixed by the local law.

ART. 37. The federal council shall publish this law and fix the date of its going into operation. — BASLE, *July 18, 1888.*

GEORGE GIFFORD,
Consul.

FRENCH AND ITALIAN IMMIGRATION TO THE ARGENTINE REPUBLIC.

France is studying a means to combat Italian influence in the Argentine Republic, hitherto almost completely controlled by French capital and colonists.

Thirty-five years ago an Italian was almost an unknown being in Buenos Ayres. In 1887, out of 137,000 emigrants to the Plata, 4,745 were French and 85,000 Italians.

The first railroad grant in the Argentine Republic, as well as first right to establish a gas work were to Frenchmen. To-day not a mile of railroad nor a single gas work remains in the hands of a French company. Italian products daily increase in number, and are substituted for those of France. France sensibly feels this and seeks to regain its former influence by urging immigration. The French, however, reluctantly yield, but tenaciously cling to their mother country, though hard work, small wages, and want are their only recompense. Whatever the cause that finally determines a Frenchman to seek a home in a foreign land, it is never sufficiently powerful to eradicate his love of country and permit him to identify himself with the institutions

and fortunes of his adopted home. He leaves France to tempt a kinder fate, but with a fixed and unalterable determination to return again to his own land.

In 1842 Bordeaux invited reciprocal commerce with the Plata by accepting the first bales of wool exported from that country. This industry exports yearly to France 300,000 bales of wool and 100,000 bales of sheepskins. South American wool and skins now demand better prices, and are more esteemed in France than those from Australia, formerly quoted at higher figures. Bordeaux sends wines, oils, conserved fruits, and vegetables, and in exchange receives wool, wheat, corn, skins, leather, and hair from Buenos Ayres. — BORDEAUX, FRANCE, *July 31, 1888.*

GEO. W. ROOSEVELT,
Consul.

TOBACCO IMPORTS INTO EGYPT.

The Egyptian Government now decrees that imported tobacco must be accompanied with duly authenticated declaration that it has been produced in the country from which it is exported to Egypt. In default of such declaration a tax of about 10 cents per pound will be imposed. The object of this tax is to protect Turkish tobacco, which the Greeks have been compounding with the products of their own and other countries and sending such compounds into Egypt. The same thing is reported from Malta. Greeks, and probably Maltese, will, I am satisfied, present all the false certificates required, and it remains to be seen how the Egyptian Government will make this decree virtually good. I have just received a letter from a Greek merchant in Anvers, who, having been informed that an effort is being made to introduce American tobaccos into Egypt, suggests that they be not imported direct, but that shipments be made to him at Anvers, where the American product could be subjected to profitable treatment. This proposition looks to fraud against Egypt, to violation of her laws, and I feel assured to the swindling of American consignors. Greek treachery is an inherent quality which has grown in greater ratio in the ascending scale than her national power and influence descended. If Americans send tobaccos to Egypt they will pursue the safest course in making direct shipments and in letting intermediaries strictly alone.

In my report sent with No. 226 I calculated that the Egyptian demand for foreign tobaccos, to satisfy the lack of home production, would begin in September. On this point I have changed my views. Further investigation satisfies me that this demand will not begin before the end of the present calendar year.

JOHN CARDWELL,
U. S. Agent and Consul-General.

THE VANILLA TRADE AT BORDEAUX.

One of the most interesting as well as delicate articles of trade upon the Bordeaux market is that of vanilla, which is imported into France from various countries producing this odoriferous plant.

Vanilla belongs to the family of orchids, and was first found in the forests of Mexico. It is a sarmentose plant, furnished with thick, oblong, glaucous green leaves. The vine sometimes attains a height of 45 feet. The principal center of production of vanilla is the littoral of Vera Cruz. It is also found on the west slope of the Cordilleras, in Java, Mauritius, Seychelles, Tahiti, Cochin-China, India, and in some of the islands of the West Indies.

HARVESTING.

The vine in cultivation begins to bear the third year after planting, and continues to bear for thirty years. Each vine annually produces from forty to fifty-five capsules or seed pods. The harvest commences in the month of April and lasts until June. The pods are gathered before arriving at complete maturity.

PREPARATION FOR MARKET.

There are two different methods in vogue for preparing vanilla for the market. The first consists in harvesting the capsules after they have lost their green tint. Woolen sheets are spread upon the ground, and when thoroughly heated by the sun the pods are spread upon the sheets and exposed to the sun for a certain period. The pods are then put into boxes covered by a cloth and again exposed to the sun. The fruit should become a coffee color twelve or fifteen hours after this last exposure. If, however, this color is not obtained the vanilla is again submitted to the heat of the sun. This process occupies about two months, at the expiration of which the vanilla is packed in tin boxes containing about fifty pods each, and securely packed.

The second process consists in tying together about a thousand pods and plunging them into boiling water, to bleach them, after which they are exposed to the sun for several hours and then coated with oil or wapped in oiled cotton to prevent the pod from bursting. During the drying the pod exudes a sticky liquid, which is expedited in flowing by gentle pressure of the pods two or three times per day. In preparing the capsule for market it loses about one-quarter its original size.

CLASSIFICATION.

Vanilla is classified in four qualities. The pods of the *primeira* or first quality are from 7 to 9 inches in length, and proportionally large. They possess in greater abundance the characteristic and agreeable perfume which gives to the product its greatest value. The *chica-punia* is less fine than the preceding. The *saccate* and *basura* are the smallest. The vanilla vine is at times covered with an efflorescence of a silvery brilliance, producing an es-

sential salts similar to that found in the pod, and which is diffused on the outside of the capsule. This is called vanilla rime, and is in great demand on the Bordeaux market.

The use of vanilla is known throughout the civilized world. It is used in perfumery and extensively employed in flavoring confectionery and cordials. It is sometimes used as a diffusible excitant, and is supposed to possess powers analogous to valerian, while at the same time it is much more grateful.

PRODUCTION.

The following is a tabulated statement of the production of vanilla in the French colonies during the last seven years:

Years.	Island of Reunion.	Guadeloupe.	St. Marie, Madagascar.	Island of Mayotte.	Tahiti.
	Kilograms.	*Kilograms.*	*Kilograms.*	*Kilograms.*	*Kilograms.*
1880	74,677	3,566	.....	.....	.....
1881	62,047	5,102	.....	.....	.....
1882	60,510	6,166	.....	996	350
1883	90,530	5,605	265	1,100	520
1884	61,765	6,166	178	985	1,875
1885	84,340	6,492	4,000	1,200	8,341
1886	164,358	4,333	8,300	1,180	2,500
Total	598,227	37,430	12,743	5,461	13,586

IMPORTATION.

Until 1845 the exportation of vanilla from the island of Reunion was nominally nothing—6 or 8 pounds annually. By degrees the industry increased, until to-day, owing to the excellent quality and quantity produced, Reunion is an important rival and competitor with Mexico.

The importations of vanilla into France from 1880 to 1886 were as follows:

Years.	Kilograms.	Years.	Kilograms.
1880	90,102	1885	93,264
1881	72,139	1886	120,016
1882	88,594	Total	614,033
1883	78,041		
1884	71,877		

Importations of vanilla into the port of Bordeaux from 1877 to 1886 were as follows:

Years.	Kilograms.	Years.	Kilograms.
1877	16,118	1883	19,000
1878	21,365	1884	25,200
1879	25,481	1885	22,600
1880	20,910	1886	26,100
1881	23,900	Total	225,374
1882	22,700		

BORDEAUX, *August 2, 1888.*

GEO. W. ROOSEVELT,
Consul.

COLLIERY STATISTICS OF NOVA SCOTIA.

The following statement shows the classes and number of men employed, etc., at each colliery in Nova Scotia during the year ended December 31, 1887.

Collieries.	Underground.				Above ground.				Construction.				Total.		Average number of tons per cutter.	Average tons per day per cutter.	Average quantity raised per day.	Number of days pits were worked.
	Skilled labor.	Laborers.	Boys.	Days' labor.	Skilled labor.	Laborers.	Boys.	Days' labor.	Skilled labor.	Laborers.	Boys.	Days' labor.	Persons.	Days' labor.				
Cumberland Company.																		
Chignecto	20	9	5	8,224	2	9	3	4,289	.....	.....	.....	.....	48	12,513	824	2.9	58	283
Joggins	32	7	8	8,643	4	21	6	7,103	4	.....	.....	283	82	16,029	520	2.5	81	204
Springhill	506	237	142	248,033	80	130	19	62,651	9	10	.....	3,227	1,133	315,911	881	3.2	1,622	275
Pictou Company.																		
Acadia	263	210	81	120,382	66	133	20	62,250	3	.....	.....	132	776	182,764	876	5.2	1,389	166
East River	5	1	.....	1,395	1	.....	.....	330	1	.....	.....	250	8	1,975	229	1.1	5.6	201
Intercolonial	129	62	69	74,496	32	56	9	30,733	1	1	.....	258	359	105,487	1,186	4.2	543	281
Barton	2	1	.....	187	.....	.....	.....	.....	.....	.....	.....	.....	3	187	162	1.3	2.7	117
Cape Breton Company.																		
Block House	9	3	.....	1,646	8	.....	.....	1,613	.....	.....	.....	.....	20	3,259	852	5.2	47	163
Bridgeport	19	.....	2	6,090	2	3	1	1,671	.....	.....	.....	.....	27	7,761	1,013	5.6	107	179
Caledonia	115	10	32	30,137	17	31	12	14,579	4	.....	.....	1,157	221	45,873	590	3.2	940	183
Francklyn	7	.....	2	2,315	.....	.....	1	274	.....	.....	.....	.....	10	2,589	774	3.2	22	241
Glace Bay	101	9	15	21,910	23	24	4	12,737	.....	.....	.....	.....	176	34,647	787	4.2	425	187
Gowrie	131	14	46	38,674	21	52	19	22,782	.....	.....	.....	.....	253	61,456	980	5.6	738	174
International	109	29	33	13,951	32	33	12	5,931	.....	.....	.....	.....	248	19,882	1,003	9.4(?)	1,032(?)	106
Ontario	20	2	3	3,827	3	2	1	1,558	.....	.....	.....	.....	31	5,385	388	2.6	52	147
Reserve	97	15	30	27,395	17	18	5	9,653	2	.....	2	1,361	186	38,409	915	4.7	425	209
Sydney	230	40	108	91,624	57	85	35	50,583	7	.....	1	2,382	563	144,589	712	3.0	708	241
Victoria	87	31	10	34,880	7	38	7	16,083	.....	.....	.....	.....	180	50,963	701	2.3	240	296
Inverness Company.																		
Mabou	3	.....	.....	15	.....	.....	.....	.....	.....	.....	.....	.....	3	15	.....	.....	.....	.....
Total	1,885	680	586	733,824	372	635	154	304,820	31	11	3	11,050	4,367	1,049,694	.....	.....	.....	3,653

INTRODUCTION OF TRAMWAYS AND GAS IN DAMASCUS.

One of the oldest cities in the world, and one that has preserved Oriental traditions and customs, and proven a formidable bulwark against all encroachments and inroads of western ideas and progress for centuries—Damascus—is about to open her gates and bid welcome to the spirit of enterprise and improvement in the contemplated introduction of tramways and gas, for both of which the necessary concessions have already been secured by Imperial firman, according to an announcement in a recent number of the Syria, the official organ of the vilayet of Syria.

Both of these works of public utility will doubtless contribute no little to the physical comforts of the inhabitants of Damascus, who are most enthusiastic over these projected innovations, which they believe will tend largely to enhance the value of real estate within the city's limits, whose population is now estimated at about 150,000.—BEIRUT, *July 31, 1888.*

ERHARD BISSINGER,
Consul.

CULTIVATION AND PRODUCTION OF RICE IN JAPAN.

The Japanese rice farmer devotes great attention and care to the selection of good, sound seed. This is a consideration of primary importance, and no one is regarded by the Japanese as a skillful farmer who sows his land with inferior seed.

HOW SEED ARE SELECTED.

The experienced farmer is guided in selecting seed by his experience, but the young farmer must be governed by general principles until taught by practice, and the general principle is to carefully watch the rice plant as it matures, and when the stalk assumes a perfect green color the time has come to make the selection. At this stage close examination will show that some parts of the rice-head or ear are of a very light yellow color, though other parts retain more of the color of the stalk. It is this latter that the Japanese farmer thinks better suited for seed and which he culls out. The seed should not be selected from plants grown on low, boggy land, nor on land of superior fertility. A medium grade of soil is preferable. Great care should also be exercised in drying the seed, and they should never be stored away in a damp place. To do so will impair their vitality and consequently lessen the yield.

Another important consideration is to have the seed in a proper condition when the season for sowing has come. The preparation for this is commenced about the middle of January. The seed intended for sowing are put in a bag, which is sunk about 1½ feet in water. When possible the bag should always be placed in running water, which is always fresh and supposed to be more susceptible to climatic influences. If sunk too deep the seed would not be so sensibly affected by such influences, and, consequently,

the sprouting would be slow. To secure uniformity in sprouting the bag should not be too full of seed, and it is advisable to put a bundle of straw rope in the center of the bag in order to prevent the seed from lying too thick. It must not be understood that bags containing rice for seed should always be sunk on the sunniest side of a stream. Nature, when courted to extreme, is never so sure to confer as substantial rewards as when our demands are conservative. Five or six days before the seed are to be sowed the bag should be taken out of the water. It should remain in the same condition as when taken from the water for one night to let the water pass off. On the second day the ropes around the bag should be loosened, the rice stirred well, and then bind the bag again with ropes and sprinkle water over it. On the third day the rice is dried in the sun for an hour or two and water sprinkled over it again. This process is repeated until about seven or eight seed out of every ten begin to bud, and now it is ready for sowing.

Another way the Japanese have of preparing rice seed for sowing purposes is to bury the bag containing the seed in the ground, the end in view being similar and the agricultural principle being the same. Sandy soil is preferred, and the hole should be about 1½ feet deep. The bag, when put into the hole, should be covered with earth about 6 inches thick. If a sunny spot is selected for burying the bag the level should be somewhat deeper, and *vice versa* in a shady spot. If the farmer has no sandy soil his best remedy is to dip the seed in water for a few hours, mix sand with them, and so shape the hole that he can keep the soil light by the frequent use of water.

PREPARING LAND FOR RICE SPROUTS.

The Japanese rice farmer commences to prepare his ground about the latter part of March. He first marks out as much as he intends to sow for rice sprouts, which should be in an open space, unshaded, and where the air circulates freely, and builds around it a small embankment to hold the water with which the land later on is to be flooded. If the soil is sticky he will turn it to the depth of about 5 inches with an instrument like an American spade, and after the clods have dried in the sun for two or three days break them with the back of the spade and apply the manure (described farther on). Most of the farmers (for their holdings are generally small) use the spade to "break up" the soil. If the farmer, however, can afford it, he owns a pony or bullock, which he hitches to a dagger-like plow and breaks up the soil. After the soil has been leveled and everything removed from it that could obstruct the growth of young sprouts the land is flooded with water from 4 to 5 inches in depth, and at this stage the farmer again hitches his bullock to an instrument like a harrow and plows through the water, mixing it and the soil until the latter becomes as mortar.

In this boggy state the soil is ready to receive the seed, and the farmer, walking around on the little embankments or standing ankle-deep, scatters them on the surface of the water.

It requires special attention in order that the seed may not be sown too thick, for the roots of the sprouts should have room to spread before the sprout grows too high, or else its vigor is weakened. The good judgment of the farmer will guide him here. The seed are sown about the middle of April, and within sixty days from this date the young sprouts will grow from 4 to 6 inches, according to the fertility of the soil. When about the height mentioned the sprouts are large enough to take up and set out. The soil to receive them must also be in good condition, and the interval between the sowing of the seed and the growth of the sprouts the farmer utilizes in preparing it. The Japanese thoroughly "break up" the soil and work it into as good condition as possible before planting or sowing. This saves labor after the seed are up and enables the plant to "grow right off." Their wonderful success in producing two or three different crops, year after year, on the same piece of ground, is no doubt due to the habit of thoroughly preparing the soil in the beginning, which obtains so universally among them.

The fields or patches of ground intended to receive the young rice sprouts are similar in appearance to the patches where they are grown. They all resemble squares in an old-fashion Southern garden, and the majority of them are not any larger. The little embankments are around these also, for water is necessary to the successful cultivation of rice, and the sprouts are set out while the fields or patches are covered with water 2 or 3 inches deep.

MANURE, AND HOW APPLIED.

The manure mostly prized by the Japanese consists of human and animal deposits. This is mixed with urine, or a little water when necessary, and applied while in a putrid and liquid state by dipping it from large wooden buckets and pouring it on the plant. When the water is removed from the soil where the seed for rice sprouts have been sown, a manure consisting of ashes from burnt straw, grass, husks, and bamboo leaves, as well as rich dirt, is mixed and, by the aid of a sieve, spread as so much powder over the soil containing the seed to protect them from the ravages of birds. When this is done care should be taken to select straw in a decaying state, for otherwise the roots of the young plants would twine around it and make it difficult to remove. But the Japanese farmer is so skillful in the chemical analysis of manure that it requires an adept in the science of chemistry to follow him intelligently, and I must content myself by adhering to general principles while on this part of the subject. If his farm is near the sea he uses sea-weed and fish as manure, but, as stated, his main reliance, especially near cities, is night-soil and urine, which, with the American farmer, nearly all runs to waste. About the farm-house everything of this kind is carefully preserved. In the cities the water-closets are unknown, and every night the vaults and urinals are emptied and the contents taken to the country many miles away. All this material is poured into vats placed in the fields to receive it, and covered with straw awnings to keep off the hot sun and rain. There it lies for months, till it has thoroughly fermented, when it is ready for use. It is then dipped out in

buckets, carried to the growing crops, and carefully sprinkled about the young plants. This process is repeated several times during the season. Sometimes piles of rice straw or chaff, or old leaves, are saturated with the mixture and left to rot, when this product is used as the American farmer sometimes puts stable manure under a hill of corn. It is this economy of material, and the application of it in the way pointed out, that has enabled the Japanese farmer to gather as many as three profitable crops, year after year, from the same acre of land, so far back that the memory of man goes not to the contrary.

IRRIGATION.

The rain-fall in Japan is very heavy, varying according to locality from 60 to 100 inches annually. Along the ocean shores, on the alluvial plains, the average amount of precipitation is about 60 inches. At the foot of the mountain ranges it is 70 to 75 inches, and on the great mountain sides it will reach 100 inches. Notwithstanding such a rain-fall, irrigation is an important feature in Japanese agriculture, and has been practiced with marked success for more than a thousand years. The Government records show decrees of the Emperor Sujin, who reigned in the country before the Christian era, regulating irrigation, and his son and successor ordered the construction of 800 irrigating canals in different parts of the Empire. The traveler finds in all parts of Japan, especially the rice districts, large irrigating works, massive and costly in their character, and from a distance looking like double-track railways. In addition to such large reservoirs for holding water, the mountain streams are taken from their beds and carried in ditches winding around the hills until they pour their contents on some narrow terrace or flood some rice field in the plain. By such means the supply of water to the farmer is equalized through the whole year, and the health of the irrigated districts for plants and people is also conserved. Some of the most illustrious names in Japanese history are the names of Mikados who won their way to the hearts of their subjects by instituting and perfecting elaborate plans for the amelioration and advancement of the agricultural classes, among which is the system of irrigation briefly described, and the necessity for which is more and more attested by subsequent experience.

CULTIVATION.

I reserved for this heading an account of how rice-plants are set out and cultivated. As indicated, the sprouts or plants are set out while the soil is covered with water to the depth of 2 or 3 inches. This office is usually performed by women or young girls. When the soil is very good from three to five sprouts make a bunch, and about thirty-six bunches are set out to every tsubo (6 feet square). If the soil is not so good ten sprouts make a bunch, and about sixty-four bunches are set out to the tsubo. The sprouts should not be set in the ground too deep, but shallow as possible to secure a firm hold. When set too deep the roots will sprout and interfere with the growth of the next crop. To ascertain what space should exist between the bunches

dig one up in autumn after the rice has been cut and measure the root. If they are as long as 6 inches the space should be 12 inches, the idea being that the roots should not touch or interlace. The first working of this plant takes place about two weeks after it has been set out. This is done with an instrument called kanjume (made like a rake and has four iron teeth, each one-tenth inch thick, one-half inch wide, and 5 inches long), by digging between the bunches. After the first working the soil appears rough or cloddy, and in this state it is allowed to remain about ten days, when the uneven surface is leveled with the same instrument. It is thought better not to remove all the water, but let it remain on the surface in small quantities, so as to facilitate the leveling of the soil. The water also contains a manure which reaches the roots of the plant quickly, and carries with it the influence of the temperature, which is very beneficial to the growth and strength of the plant. About thirteen days after the soil has been leveled the third working takes place. At this working it is usually found that small roots have grown on the top of the ordinary roots. These absorb the manure without protecting or benefiting the growth of the plant. They should be cut off. About the time of this third working a small egg may be found, which produces the seni-mushi, a small insect destructive to the rice-plant. Care should be taken to remove the eggs, and they should be searched for diligently, or else the farmer sees his rice-plants later on wither, although he is industrious in working and manuring them. The rice-plant requires five different workings. This is the general rule in Japan, but I suppose the condition of the soil has much to do in determining the number of workings necessary.

When the ear of the rice shows a light yellow color it is important that the water be drawn off in order that the soil may dry. By thus drying the soil the best quality of rice can be headed. The rice plant is not, strictly speaking, a water-plant, though it is fond of the water, the application of which is necessary to aid nature and man. The time it requires water most is between the time of replanting or resetting out and its heading. The water during this time will be let on or drawn off, according to the apparent needs of the plant, but it should never be suddenly drawn off, as the manure may flow out with it, nor should it be let on in too strong a volume.

HARVEST.

About the last of August and the first of September the rice farmer puts his reap-hook in order. The yellow golden color of the ear or head of the rice-plant will best tell him when to enter his field and cut down what, for the past several months, has been the object of his greatest care. I have not seen any mowing-machines since I have been in Japan, such as are used in the United States for cutting wheat and other cereals. The way in which the fields are divided off and the small area included within each division would render the use of such machines impracticable, though there are many level plains in Japan, wide and extended. The instrument used for cutting

rice is a small, crooked blade, fastened to a short wooden handle, and can easily be wielded by a man with one hand.

The rice, when first cut, if the weather looks favorable, is often spread on the ground and left to dry. This is supposed to be the better plan; but if the weather is unfavorable it is tied into bundles as fast as cut and carried home to dry by hanging the bundles on a long pole supported by forks, which is sometimes done in the field where cut.

The fruit is separated from the straw by a very simple process. The farmer will make an ordinary wooden bench and drive iron pins into one side of the wood forming the seat, then take a bundle of rice and draw it through the iron pins or teeth. The fruit is, by such a process, successfully separated, and falls on a straw matting prepared to receive it. The fruit is separated from the hull by a process equally as simple as that employed in separating it from the straw. After being separated from the straw it is poured on a straw matting spread on the ground and beaten with a flail until hulled.

Now it is necessary to free the fruit from all chaff. To do so the fruit is put into a basket and then poured on a matting or cloth spread on the ground. The chaff is blown off and the fruit falls on the cloth. It is then taken and run through a machine similar to a hopper. But the most peculiar machine for cleaning rice is known as the *usu*, a large wooden or stone mortar, the pestle being fastened to the end of a beam fixed on a pivot, and put in motion by a man treading on one end of the beam. Sometimes the pestle is worked by means of water-power, and there are some mills near this city, for cleaning rice, with twenty or thirty pestles all moved at the same time by water-power. Modern machinery is now being introduced into Japan for the purpose of cleaning rice. There is a large mill in this city with such machinery.

PRODUCTION AND CONSUMPTION.

A very interesting official report on the principal articles of food in Japan has recently been published, and the following statistics and comparisons are compiled from it:

The principal articles of food in Japan are rice, wheat, barley, etc., and next to these come all other cereals and potatoes. Besides these, sea-weed, fruit, and vegetables are consumed. Dividing these into six divisions, viz, rice, wheat, other cereals, sweet potatoes, potatoes, and other articles, the percentage of consumption will be as follows: Rice, 51; wheat, 28; other cereals, 13; sweet potatoes, 5; potatoes, 1; and all other articles not enumerated, 2 per cent. This computation is only approximate, but if the rate be apportioned between the population of Japan—37,778,705, according to the census of 1886—we find that 19,267,140 persons eat rice; 10,578,037 persons wheat; 4,911,232 persons other cereals; 1,888,935 persons sweet potatoes; 377,787 persons potatoes; and 755,574 persons greens, sea-weed, fruit, etc. If the amount of rice, wheat, etc., consumed per year

be estimated at the above rate, the amount of rice consumed will be 21,097,518 koku (5.13 bushels) or 3 go (about 5.1 oy = 1 go) per day for one person, and wheat, etc., 11,582,951 koku. The aggregate product of rice in 1886 was 37,191,424 koku, and the amount imported from abroad was 3,926 koku, making a total of 37,195,350 koku. Of this, 21,097,518 koku is used for food, 1,961,076 koku for *saké* brewing, 554,976 koku for export abroad, and 2,995,932 koku for cakes. Deducting these amounts from the above-named total, there remains a surplus of 10,585,848 koku. The wheat produced in 1886 amounted to 16,033,960 koku, and the import from abroad was 127 koku, which makes a total of 16,034,087 koku. Of this 11,582,951 koku were consumed as food and 657 koku were exported, leaving a balance of 4,450,479 koku, which is supposed to be consumed in other ways. The aggregate export of rice for the last nineteen years, from 1868 to 1886, inclusive, was 3,221,135 koku, valued at 18,531,313 yen (73½ cents in gold is equal to 1 yen), while the import during the same period was 3,572,842 koku, valued at 23,914,067 yen. The amount imported in 1870 was especially large, as it constituted about 60 per cent. of the aggregate of the nineteen years. If we compare the exports of that year with the imports there is a balance in favor of the latter of 5,382,754 koku. But since 1877 the export has been gradually increasing, the export for 1886 totaling a little over 550,000 koku, valued at 3,300,000 yen. If the export is continued at this rate the balance will be equalized in two or three years. Below is given a comparative table of the import and export and of the original value of rice, wheat, etc.

Foreign trade in rice, wheat, etc., from 1870 to 1886.

Articles.	Original value of imports.	Original value of exports.	Excess imports.	Exports.
	Yen.	*Yen.*	*Yen.*	*Yen.*
Rice	23,914,067	18,531,313	5,382,754	.....
Wheat	69,621	2,728,677	.....	2,659,056
Flour and other grain	1,208,926	259,841	949,085	.....

Rice is now selling in Japan at 6 yen per koku. The demand is fair and steady. The facilities for shipping are good, and the charges (freight) to New York range from $10 to $22.—OSAKA AND HIOGO, JAPAN, *June 1, 1888.*

T. R. JERNIGAN,
Consul.

RICE CULTURE IN NINGPO.

There is no sugar-cane grown in my immediate district. Rice is cultivated to a large extent. In the early part of April a small patch or bed of ground is prepared by being richly fertilized and thoroughly plowed to a depth of 6 inches, then raked or harrowed so as to leave the soil without lumps—perfectly smooth and well saturated. Rice seed is then sown thickly,

after which care is taken to keep the soil covered with fully 5 inches of water until the young shoots appear. In fifteen days the shoots are ready to transplant, having in that time attained a height of some 7 or 8 inches. They are then transplanted to the fields, which have been prepared. The preparing of a field for transplanting requires a great deal of care and labor. From the 15th to the 25th of April, when the work commences, the rice fields have a rank growth of wild clover. This is cut down with a crooked knife, something like our briar-hook; then the land is dampened by water from the canals, a wooden chain-pump being placed in the canal and worked by an ox, thus throwing water rapidly into the fields, and the field well plowed. Then the clover, which has been cut, is thickly scattered over the field and plowed under, when water is again pumped on the soil. Then the soil is perfectly prepared by a rake with iron teeth, some 10 feet wide, pulled by an ox, causing the soil to become so very soft that the man and ox have to walk knee-deep in mud. The harrowing, when finished, leaves the land prepared for transplanting the rice from the seed-bed. The shoots of the first crop, when planted, are set out 8 inches apart in rows 16 inches apart. Twenty days after the second crop is set out between the rows, and water to the depth of 2 or 3 inches above the soil is pumped from the canals until about a month before the ripening of the rice; the water fertilizes and keeps down the growth of weeds. In four or five months' time from the transplanting the rice has ripened and is cut with a small, straight knife, with a handle at right angles with the blade. A variety called the "lo mi" is set out about June 1 and ripens late—about the middle of November. From this samshu (wine) is made, and also a cake much relished by the natives.

Poppy is planted about March 1, and taken off about June 1. The field is then prepared and set out with rice. After the rice has been cut and gathered it is then dried in the sun. As soon as well dried it is thrashed out in a box, by beating on its side, the back part being 2 feet higher than the front. The rice being beaten out is again thoroughly dried in the sun and then run through large sieves (made of bamboo), worked by hand, so as to clean it of small straws and dirt.

The rice, or paddy, is now ready for sale or cleaning. It is not cleaned by small farmers. They may now and then attempt to clean a small portion for immediate use, but it does not pay; it is more profitable to sell the paddy and buy rice. Rice cleaning is a trade, which persons learn and follow as a life business, and is attached to all rice hongs (shops), some of these giving employment to twenty hands, a few employing many more. The hongs employ skillful purchasers, who go into the country and buy the paddy of the farmers, forwarding it to their hongs. All large rice dealers are more or less speculators, so grain corners sometimes occur.

The cleaning of the paddy by small dealers is done by placing it in a large stone mortar, using a stone pestle to beat it clean. Large dealers have a circular machine of stone some 10 or 12 feet in diameter. On the extreme outer circle the stone is grooved or hollowed out so as to fit a stone wheel—

which is 5 feet in diameter and 6 inches thick—having a rounded edge. The paddy is placed in the groove and crushed or cleaned by the wheel running over it. This work is done by an ox, which patiently circles round, pulling on a lever attached to the circular stone crusher. A picul (133⅓ pounds) of paddy will turn out about 75 pounds of clean rice, the balance being the husk, tailings, dust, chaff, and broken rice.

The paddy (rice) is generally sold by small farmers to the rice dealers, who clean it.

The hulls are used with mortar for plastering houses and fires for cooking; the tailings are fed to ducks, geese, etc.; the dust and chaff is fed to pigs and poultry; the broken rice is ground into flour and sold to confectioners. The production per mow (one-third of an acre), in ordinary seasons, is about 8 piculs of paddy (1,066⅔ pounds); the average consumption of a family of six (man, wife, and four children) would be about 6 pounds a day. It is their principal food, and at the present value of rice, would cost 10 cents per diem. The cost of cultivation is hard to ascertain. In this immediate district the farms are small, and are owned by large landowners, who rent them to smaller farmers on shares, the landowner furnishing the tools and fertilizers, the renter furnishing ox, labor, etc., and also gathers the entire crop and pays the landowner one-half of the entire production for rent; consequently the renter and his family work the land. There are no supply merchants, but a farmer can borrow money if he has stock. A middle-man is consulted; he arranges with the capitalist, who takes a pledge on the stock. The middle-man is witness and security; he is paid brokerage. The farmer pays the capitalist 2 per cent. per month for the money he procures. Very few borrow; they support themselves by the sale of poultry, eggs, and vegetables. Day laborers for the farm can be procured for 10 cents a day, including meals. There is no expense for fencing—the country lays open, the stock is kept up and not permitted to interfere with growing crops.

As an article of commerce it has no value, the amount produced in this part of the province being insufficient to supply the consumption (as cotton is grown to a considerable extent), and consequently a large quantity is imported from Chinkiang in junks. Tribute, in lieu of rice, is paid in bullion. Freight through to Canton by junk is 23 cents per bag of 200 pounds.

The present value of rice is $3 per 200 pounds, this being the price for the ordinary rice raised by the native farmers. The extra-cleaned, full-grained, such as used by foreigners, is worth more—being imported from Canton—about 5 cents per pound. There is but little fluctuation in the price during the year, except there is a short crop—in that case the speculator makes his corner and advances prices from 25 to 50 per cent., according to the wants of the consumer.

Sugar is imported from Swatow, Foo Chow, and Formosa, all native grown and manufactured. The white (C) coffee sugar (native) is worth 5 cents per pound in bags of 180 pounds; common brown, also in bags, about 4 cents

per pound; crushed and loaf (foreign) sugar from 10 to 12 cents per pound, retail. The money values, as given in this report, are based on the Mexican dollar, which is the currency here. — NINGPO, *May 1, 1888.*

THOS. F. PETTUS,
Consul.

PRODUCTION AND CONSUMPTION OF RICE IN CHINA.

Rice is the chief product of the soil of China, as it is also the chief article of food of the people. The two varieties of the rice-plant, known as the "upland" and the "lowland," are both cultivated in this district, but the great bulk of the production is the lowland rice.

The tribute sent to Peking for the Imperial use is, for the most part, of the upland variety. This is grown on high dry ground, requiring little or no irrigation. The labor of producing upland rice is less than half, probably a third, of that required for the lowland. The soil is prepared by the plow, after having been thoroughly manured. The seeds are sown in March, and the soil is dug up between the drills from time to time to keep it loose and free from weeds. During the growth of the plant liquid fertilizers are applied to the roots three or four times. It is harvested in September. Soil which will produce wheat and barley will grow the upland rice. A good yield is about 30 bushels to the acre. The weight of a bushel of this rice, hulled and cleaned, is about 60 pounds. As the upland rice is nearly all sent as a tribute, it does not come on the market, and I can give no quotations as to its price.

LOWLAND RICE.

The lowland rice requires an abundance of water in its cultivation, and is grown in the plains and valleys.

The Chinese are rather gardeners than farmers, the farm lands being small in size, rarely more than two or three acres in extent. Their agricultural implements are few and simple, of the rudest and most primitive pattern, the same they have used for centuries without improvement. The farmer makes up by hard labor and constant manuring for any lack of knowledge and the disadvantages of poor implements. They use the hoe more than any other implement. It has a broad wooden blade with an iron edge and a long stout handle. It is used to dig, as well as to break the sod by a blow; its weight makes it effective. The plow is made of wood guarded with iron, which makes a furrow 5 or 6 inches deep and about as broad. It is drawn by a buffalo, which is attached by a rude gearing and guided by a line through his nostril. The harrow is a heavy stick, furnished at one end with a single row of wooden teeth set in a sort of frame-work of bamboo. Cradles, scythes, and the implements generally in use in America are unknown to the Chinese. They have no modern or labor-saving machinery for cleaning, hulling, or thrashing rice.

The fields or, more correctly speaking, the plats of ground devoted to the cultivation of rice are separated by raised pathways, which serve the purpose of a fence, path, and water-way. Preparations for sowing the rice begin

early in March. The ground is broken by the hoe or the plow, when the water is turned on to the depth of 2 or 3 inches. A few days after it is harrowed and made level, all lumps of earth being carefully broken, then it is ready for planting. Several weeks previous to this, however, a small patch of ground is broken up and flooded, when the seed-rice, which has been soaked in water for a short time, is thickly sown on it. In a month this has taken good root and stock and is ready for transplanting. The farmer then takes this growing rice, wading in the mud for this purpose, divides it carefully into small bunches tied with a piece of rice-straw, and transplants it in the ground prepared for it, a few spears together in rows a few inches apart. The women of the farm do much of this work. The plats are constantly supplied with water for about two months, when they are drained off and allowed to dry. In September the rice is ripe and ready to be gathered, which is done by hand with an implement something like an old-fashioned reaping-hook or bill-hook. The cultivation of rice from beginning to end is accompanied with great labor. The yield per acre is about 500 pounds from 75 pounds of rice sown, gross, that is, unhusked rice, about 25 bushels.

For thrashing the rice they have what are called thrashing-floors, a level space smoothed over with a layer of mixed lime and sand with cement added, and well pounded. The surface of this floor is a little inclined and has a raised curb around it. The thrashing is done by unshod oxen or with flails. Husking rice is done by means of a stone roller revolving in a stone mortar and has to be gone over five or six times. Five piculs of unhusked rice yield 2½ piculs of clean rice. About 5 piculs can be husked by one man per day. The husks are used for fuel.

FERTILIZERS.

Fertilizers which are repeatedly used in the early stages of the cultivation of rice are made from night-soil mixed with earth. Thousands of people are engaged in gathering the night-soil from cities and towns and transporting it to the country. This is done when at a distance by donkeys, with a covered tub slung on each side, and generally by coolies with buckets slung on each end of a pole across the shoulder. The droppings of horses and cattle are carefully gathered also for this purpose. Bean-oil cake is also used as a fertilizer. The farmers provide large tanks as receptacles for this manure.

IRRIGATION.

To maintain a water supply for the rice fields the farmers usually club together and make large pools to receive the rain for common use. It is then, when required, supplied to the fields by pails; sometimes by water-wheels worked by treading with the feet. Where a natural streamlet exists it is utilized by conducting it through ditches or bamboo pipes to the fields. The Chinese have no system of irrigation as in Japan, where it is elaborate and complete and has been established for centuries.

The cost of the ground or lease per acre is from $7 to $10 per annum.

The laborer in the rice field for hoeing, manuring, and harvesting is paid 20 cents per day.

The consumption of rice per family of five persons is about 5 pounds per day. The present price of good rice is $3 per picul of 133⅓ pounds. It has ranged during the last ten years from $2.50 to $4.50 per picul, but does not vary much during the year. Three kinds of rice, exclusive of the upland, are grown in this consular district in the following proportions:

Sienmi, ordinary eating rice, seven-tenths; *Nomi*, fermented and distilled into wine and spirits, one and one-half tenths; *Nanmi*, for cakes and soup, one and one-half tenths, same as ordinary rice.

Rice is brought to this port mainly by water, by the river and through the canals. Powdered quartz, limestone, and water are frequeutly mixed with it by the dealers to increase the weight. The freight from Chinkiang to Canton or Tientsin, the principal consuming markets, is about 12 cents per picul. It is usually packed in straw bags containing 100 pounds. Rice pays an inland revenue tax, very variable according to distance, direction, etc., about 15 to 18 cents per picul.

I have no data as to the quantity or value of the total rice crop of the district.

By Imperial decree it is forbidden to export rice to foreign countries.

Sugar is not cultivated in this district.—CHINKIANG, *April 26, 1888.*

A. C. JONES,
Consul.

RICE IN THE PROVINCE OF KIANG-SU.

The plain throughout the province of Kiang-Su produces the best quality of rice grown in China. The climate of this great rice-producing section is semi-tropical, the temperature ranging from a few degrees below freezing in the coldest weather to 100° in the hottest. But little rain falls from July to midwinter. In February slight snow-falls occur. A winter without snow is regarded by the natives as a calamity, so far as agriculture is concerned. March and June are usually rainy, and during the latter month the heat and moisture together are very favorable to vegetation.

The seed rice is usually soaked and planted thick in a small plot of ground specially prepared, and when it is up a few inches it is transplanted over the fields in straight lines close to each other. From planting to harvesting time farmers endeavor to keep their crops free from weeds and insects and well supplied with water. Planting usually takes place in March and harvesting in June. Aside from a rude plow used in preparing the ground for the plants, and a water-jerking apparatus for flooding the fields, no machinery is employed in the cultivation of rice, and the harvesting is done with sickles in the most primitive manner. The culm is cut close to the ground and bound into small sheaves, which are placed upright, but not allowed to stand any length of time, as thrashing takes place as soon as possible after reaping. A thrashing-floor is prepared in the open field. A bundle of rice is grasped and the grain-end struck smartly over the edge of a bin, repeated blows separating the grain from the straw.

There are other ways of thrashing, but are all of a simple form of manipulation, calling for patient toil, without ingenuity. In winnowing the grain a rude machine is sometimes employed, which in construction is not unlike early patterns of the hand-mills seen in America. Another mode is to sift the grain on a windy day, or toss it up against the wind, which blows the chaff away, the rice falling to the ground.

There is nothing in the cultivation of rice in this section of China that commends itself as superior to the methods pursued in America.

An average yield is 1,000 pounds per mow of 7,260 square feet. The consumption depends upon the class of people using it. The laborer who uses rice as a regular diet consumes from 1½ to 2 pounds per day. There are classes too poor to insure as large a quantity as this, and the wealthier people have more of a variety of food, and while rice is their main-stay they use a smaller quantity.

The cost of cultivation is not easily ascertained. After numerous inquiries I find that a farmer will cultivate, say one acre of ground, performing all the labor himself, excepting during planting and harvesting, when he employs two laborers for a period of eight days each. He pays these laborers at the rate of 10 cents a day and food, in all 15 cents a day per man. Thus he pays for sixteen days work at 15 cents per day, equal to $2.40. From sowing to harvest is about three months. The average crop per acre is about 40 piculs, for which he receives, on an average, $80 in Mexican money, which, at .759, the rate of exchange fixed by the Government for the current year, is equal to $63.72. The outlay for labor, taxes, etc., mentioned in this report, refers to Mexican money, which is the circulating dollar of the treaty ports of China.

The actual disbursements on one acre in the course of one year amount approximately to $5, made up of $2.50 for taxes and $2.50 for tools and sundries. An additional expenditure is sometimes made for manure, but farmers usually exchange vegetables for fertilizers when they need more than their farm's supply. In a bad year, when from storm or drought the yield is poor, farmers petition the authorities to remit a portion of their taxes. The petition is usually granted.

The Chinese method of cultivating rice may be divided into ten stages: 1. Preparing the soil; 2. Sowing; 3. Transplanting; 4. Thinning the plants; 5. Removing the weeds; 6. Flooding the fields; 7. Reaping; 8. Thrashing; 9. Winnowing; 10. Pounding the rice, in order to remove the "skin."

There are no foreign exports of rice from this part of China. It forms an important article of domestic commerce, however, and during 1887 there was exported from Shanghai to other parts of the Empire (as custom-house clearances show) 4,200,000 piculs, equal to about 9,000,000 bushels. A large amount is carried in junks of which no record can be obtained.

Of the above quantity 830,000 piculs was tribute rice, which goes to replenish the Imperial granaries at Peking.—SHANGHAI, *June 7, 1888.*

J. D. KENNEDY,
Consul-General.

RICE AND SUGAR IN INDIA.

While exact statistics of the production and consumption of rice in British India are not available, yet enough is known to warrant me in saying that the quantity is very great. When we take into consideration the fact that rice is the principal article of food with the native population of British India (estimated at 250,000,000), and that each adult will consume during the year about 500 pounds of rice, and that the entire population will use on the average probably from 200 to 250 pounds each, an approximate idea may be formed of the vast quantities of that staple food-cereal which are consumed by these people. In fact, "rice and curry," as you are probably aware, is a standard dish in this country with the European population also.

METHODS OF CULTIVATION.

Rice is cultivated entirely, as far as I am able to learn, by the native farmers, or "ryots," as they are called here.

The gemindar or landlord is often an extensive landholder, but the tiller of the soil is, as a rule, the tenant of a small patch of ground only. He plows his land (or scratches over it) at least twice with a very rude and small East Indian plow, which has but one handle and costs about $1, and is constructed somewhat like the old fashioned "bull tongue" plow of early times in the United States. Two crops of rice are raised during the year, but not on the same ground.

The "aus" or early rice, as it is called, is sown in the latter part of April and in the month of May, the time of sowing being controlled to some extent by the rain-fall. This crop ripens and is harvested in the latter part of the following August and the first part of September.

But the principal rice crop is the one that is sown during the rainy season in August and September, and ripens in the following December and January. The rainy season proper in this part of India usually extends from about the middle of June until the middle of October.

The greater portion of the rice crop in this country is pulled up and transplanted (on other ground) by hand, when the plant has grown to the height of 12 or 15 inches. This occurs during the rainy season, and the stalks are set out in small bunches 6 or 8 inches apart.

The rice cultivator depends principally upon the natural rain-fall, and a drought is usually followed by a failure of crops and often a famine amongst these poor and improvident people. There are in some places means of irrigation from canals, but I am informed that artificial irrigation in this country, for some reason, has not been followed with good results when applied to the rice crops.

The cost of cultivating rice in this country is from $2 to $2.50 per acre, and the average yield per acre is from 30 to 35 bushels of "paddy" (unhulled rice), worth from about $6 to $7.

Rice in this country is cut with a small hand-sickle, tramped out with cattle and winnowed with a simple hand-fan when there is not a sufficient natural breeze for that purpose. The rice is usually boiled for a short time in

earthen pots and is then dried in the sun, by which process the hull becomes materially loosened. It is then placed in a rude mortar, constructed by digging out an inverted bell-shaped cavity in the end of a good sized block of timber, and the pestle is arranged on the end of a lever which has its pivot in the end of a forked stick set in the ground. It takes two natives to operate this machine — one feeds the mortar and the other manipulates the pestle from the longer and lighter end of the lever until the hulls are removed.

The above-described is the most important piece of machinery that I have seen in use amongst the farmers of this country. They seem quite content to pursue substantially the same methods which were probably in vogue when Alexander the Great conquered their country. And I am assured by well-informed old residents here that the ordinary Indian "ryot" or farmer considers that he would not be showing due respect to the memory of his forefathers if he should have the presumption to endeavor improve upon their methods of farming.

The rice grain of this country, like the wheat, is much smaller and less plump than that grown in the United States; seed of the latter (Carolina rice) has been tried here, but so far with unsatisfactory results. Rice sells here at from 2 to 2½ rupees per "maund" (82 pounds) for ordinary quality, such as is used by the masses of the native population, and counting the rupee at $0.332 would make it cost the consumer from about four-fifths to 1 cent per pound. But the quality of table rice, such as is used by Europeans and the better class of natives, is worth from $1 to $1.50 per maund. The price does not ordinarily vary materially at different seasons of the year, but there is generally a slight depression of values for a time after the harvesting and during the marketing of each crop.

Besides the vast quantities of rice required for home consumption in India, as I have already indicated, it is also an important article of export, as the following figures will show. For the year ended March 31, 1887 (the latest reported), exports were as follows:

Rice in the husk (paddy), 418,772 cwts.; value, 720,117 rupees. Hulled rice, 26,460,500 cwts.; value, 87,648,089 rupees.

The above exports are credited as follows:

	Cwts.
From Bengal	5,902,278
From Bombay	638,787
From Sindh	139,511
From Madras	1,564,053
From Burmah	18,215,871

Principal countries to which exports were sent:

	Cwts.
United Kingdom	8,108,021
Malta	1,119,230
Germany	128,316
Egypt	4,370,150
Mauritius	1,222,757
France	89,280
Italy	63,597

I notice that a few trial consignments of East Indian rice have been sent to the United States during the past quarter. The Government of India levies an export duty on rice (hulled and unhulled) of 3 annas, a fraction over 6 cents per maund.

SUGAR.

The sugar-cane is extensively cultivated here, and is well adapted to the soil and climate in most parts of India, especially in the alluvial sandy loam of the valley and delta of the Ganges and other similar soils.

The cuttings of the sugar-cane are set out in rows about 2 feet apart each way in the months of June and July, and the crop is not plowed, but is carefully cultivated with a short-handled heavy hoe, the handle being only about 18 inches in length and the blade being considerably heavier than that of the ordinary hoe in use in our country. The cane is cut in December and January and the juice expressed by passing the cane between revolving iron or wooden cylinders. Molasses as well as sugar of good quality is also manufactured to a considerable extent from the sap of the date and "toddy palm" trees in this country.

The native East Indian is proverbial for his fondness of "sweets," and those of them who can afford the luxury use sugar in various forms quite extensively, and large amounts of sugar and molasses are produced and consumed in this country.

EXPORTS.

The exports of sugar from British India for the year ended March 31, 1887, are given as follows:

Sugar, refined, 33,340 cwts., valued at 441,435 rupees. Sugar, unrefined, 953,066 cwts., valued at 4,606,597 rupees. The cost of cultivating sugar-cane is about $16.50 per acre and the average yield about 2½ tons of cane, worth from $24 to $25. The refined sugar of commerce in India (refined here) is of three grades: No. 1, white, crystalized in cubes about one-eighth of an inch in diameter; No. 2, apparently of about the same quality as No. 1, except that it is of finer grain, and No. 3, which is the ordinary brown sugar. No. 1 wholesales at 11.4 rupees = $3.72 per maund (82 pounds); No. 2, at 10.8 rupees = $3.48 per maund, and No. 3 at 8.12 rupees = $2.90 per maund.

The facilities for exporting the products of this country are, as a rule, quite ample. During most of the time that I have been here there have been continuously present in this port over 100 large sea-going merchant vessels.

The present freight rates for rice and sugar to the United Kingdom via Suez Canal are from 30 to 35 shillings per ton. For the same goods, by sail vessels to New York, the cost of freight is about $5 per ton.—CALCUTTA, *April 23, 1888.*

B. F. BONHAM,
Consul-General.

Vienna has sent a number of representatives to the Inland Shipping Congress at Frankfort on-the-Main. This city is one of the best places for showing the improvement effected in river navigation. A report which has been published shows some very striking figures in regard to the development of shipping on the River Main and the competing railways in the past two years, during which the River Main has been canalized and provided with fine iron weirs and sluices from Mayence up to Frankfort, a distance of about 20 English miles. In 1886, before the opening of the canalized river, the Main carried 311,586 tons, or 1.1 per cent. of the total traffic; in 1887, after the opening of the canalized river, 15,352,452 tons, or 33 per cent., passed over that route. At the same time, the Taunus Railway increased its traffic from 8,802,222 tons to 11,067,408 tons; whereas the traffic of the railway on the left side of the river decreased from 25,264,272 tons to 19,954,809 tons. The other railways increased their traffic, so that altogether an enormous augmentation of business was the consequence of the new works for the improvement of the River Main.

RICE AND SUGAR IN NEW SOUTH WALES.*

Rice is not grown in sufficient quantities in New South Wales to be regarded as an article of commerce. Several varieties of the plant have been grown to perfection on the land subject to overflow in the northern parts of the colony, but the high cost of labor and the limited area in which it can be grown are the principal obstacles in the way of its profitable cultivation in this colony. The soil and climate of Queensland are better adapted to rice than this colony. It is certain that something like success has attended the efforts to grow the plant here, and the home-grown product is said to be of good quality and to sell at a less price than the imported article. No returns, however, were collected by the Government of the extent of its cultivation until 1887, when the annual yield was given at 24,286 bushels. The quantity of rice annually imported into New South Wales is between 6,500 tons and 7,500 tons. The imports into Queensland amount to about 2,300 tons. The bulk of these imports comes from Hong-Kong and China. Small quantities also arrive from India and Japan.

The subjoined table shows the quantity and value of rice imported into New South Wales for each year from 1878 to 1887 inclusive:

Year.	Quantity.	Value.	
	Tons.		
1878	6,080	£90,036	$438,155
1879	4,710	77,306	377,204
1880	4,619	80,826	393,339
1881	6,801	117,707	572,821
1882	6,480	101,434	493,628
1883	5,052	78,188	479,582
1884	8,083	126,158	613,948
1885	6,835	92,160	448,491
1886	6,640	91,641	445,966
1887	7,564	102,700	499,789

*I have been aided in the preparation of this report by Mr. D. A. Crichton, who is now engaged in delivering a series of valuable and instructive lectures upon agriculture in the "Technical College" at Sydney.

The cultivation of sugar-cane in New South Wales is confined to the northern coast districts and particularly to the rich alluvial lands bordering on the Clarence, Richmond, Tweed, and Brunswick rivers. The soil and climate of these districts are especially adapted to the growth of sugar-cane. The sharp frosts, however, of early spring occasionally interfere with the industry.

I have mentioned in several of my reports that sugar was first grown in New South Wales in 1823 by Mr. Thomas Scott, at Port Macquarie. In 1827 that gentleman succeeded in making several tons of sugar out of cane grown by him, but more than a quarter of a century elapsed before anything like a determined effort was made to place the sugar industry on a permanent footing. Indeed, at so late a period as 1863 the total quantity of sugar produced in New South Wales amounted to only 280 pounds. The farmers at that time and for several years afterwards paid more attention to corn (maize) than to anything else except sheep farming. Growing maize proved unprofitable. The price of corn got lower and lower every year, and the farmers began to look about for other kinds of crops, and fixed their attention on sugar. The industry made its first bound in 1868, when the number of acres in cane increased from 647 in 1867 to 2,584 acres in 1868.

The Government began making returns of the number of acres in cane in 1863, but no returns were made of the product of sugar until 1877, when it was 99,430 tons. In 1884 it increased to 204,547 tons, and in 1886 to 239,347 tons, which was the heaviest yield in any one year in the history of the colony. In 1887 it was only 167,959 tons, and this was obtained from 5,915 acres, showing an average production of 28.39 tons per acre. During the year 15,117 acres were under cultivation, but 9,202 acres were returned as non-productive.

The following table shows the number of acres in sugar, productive and non-productive, with the number of sugar mills in operation and the quantity of sugar produced for each year from 1877 to 1887, inclusive:

Area in production of sugar-cane in New South Wales.

Year.	Productive.	Uuproductive.	Production in tons of sugar.	Number of sugar mills.	Quantity of sugar manufactured.
	Acres.	*Acres.*	*Tons.*		*Cwt.*
1877	3,524	3,231	99,430	50	93,960
1878	3,331	3,735	99,978	50	150,744
1879	2,949	4,489	104,192	59	163,203
1880	3,675	4,102	126,119	65	153,833
1881	4,465	6,506	121,616	65	146,003
1882	4,983	7,184	128,752	76	159,048
1883	6,362	7,176	169,192	86	270,000
1884	7,583	7,401	204,547	93	280,000
1885	6,997	10,520	105,323	98	230,000
1886	9,583	6,835	239,347	102	369,280
1887	5,915	9,202	167,959	64	275,000

Mr. D. A. Crichton is of the opinion that sugar-cane can not be profitably grown in New South Wales south of the Clarence River. He says that "in the early days of the industry on the Macleay River, which is 100 miles south of the Clarence, a considerable area of cane was planted and a number of sugar-mills established, but it was found that the crops were less reliable than those further north."

According to the returns for 1887 only 175 acres were in sugar-cane in the Macleay district. The returns from the Clarence district for the same year show that there were 5,121 acres. This crop was divided into 375 sugar-farms, and the average yield of cane was 25 tons per acre. In the Richmond district, which includes the Tweed and several other rivers, the area under crop was 9,773 acres, and the average yield was 29½ tons per acre. Out of the total number of acres in cane in New South Wales only about one-third can be relied upon as productive. When the industry was first started the farmers labored under many difficulties, especially in regard to the want of knowledge as to the methods of cultivation and the kinds of machinery to be employed. A number of mills were established in various parts of the colony, but their owners were unable to make them pay. A better state of affairs was inaugurated when the Colonial Sugar Company commenced operations in 1870. This company purchased the latest and best patterns of machinery which could be procured in Europe, and as the capital of the company was unusually large it was enabled to assist the farmers in various ways. The company early adopted the plan of purchasing the cane from the growers as it stands in the field at a fixed rate per ton, thus relieving the farmers of the trouble and expense of cutting and hauling it to market. The price usually paid by the company is from 10 shillings ($2.43) to 13*s.* 6*d.* ($3.28) per ton, according to the quality and richness of the juice. Farmers who prefer, however, to cut their own cane and carry it to market are at liberty to do so, although very few adopt that plan. For some time the small sugar-mills were kept in operation by the farmers, but now these mills are becoming fewer every year, due, principally, to the large mills of the Colonial Sugar Company doing the great bulk of the business of the colony. The system of manipulating the cane has been completely revolutionized during the last ten years. One large mill is now doing the work formerly performed by a number of smaller ones.

METHOD AND COST OF CULTIVATION.

Sugar production in New South Wales, notwithstanding the various drawbacks, is unquestionably a fairly profitable industry. Land suitable for growing the cane can be purchased at from £30 ($145.99) to £40 ($194.66) per acre. When land is leased or rented for sugar growing a rental of £2 5*s.* ($10.95) per acre, and in some localities as much as £3 10*s.* ($17.01) is charged. The cost of preparing land for cane growing depends on the condition of the land. The cost of clearing ordinary scrub land varies from £10 ($48.66) to £15 ($72.99) per acre; but when very heavily timbered a

heavier expenditure than £15 ($72.99) per acre may be required. The cost of planting the cane and keeping it in order the first year will average £8 ($38.93) per acre. The average afterwards will not exceed £6 ($29.19) per acre.

In fairly good seasons the cane is ready for cutting in about eighteen months, but under less favorable conditions fully two years are required before the crop is ready for harvest. The seasons in New South Wales are directly opposite to those in England and the United States, and planting is done in September and October instead of March and April. The cutting season begins in July and lasts three or four months. All the various systems of planting have been tried here—systems followed in wet and dry countries, and in countries subject to fierce wind storms or tornadoes.

Mr. Angus Mackay who has rendered me valuable assistance in the preparation of every one of my reports on agricultural subjects states that "all the methods of sugar growing heretofore adopted are gradually falling into a system suited to the mild and favorable conditions of the Australian climate."

The method pursued is as follows: After plowing, harrowing, and rolling until the soil is reduced to a good condition the furrows are opened with an ordinary swing plow. Marking-sticks are placed the full length of the line to be planted. The plow then passes along and throws out the soil about 7 inches wide and 5 inches deep, the sticks referred to being the guides. The plow again passes back through the furrow, throwing out the soil to the other side, increasing the depth an inch or two. A sub-soil plow (strong single or common plow body), the mold-board having been removed, then passes along the furrow and deepens it 2 or 3 inches more, say 8 inches in all, which is considered a fair depth by most planters. During the time the plant furrows are being opened the plants are laid down along the line to which they are carried, either on pack-horses or in baskets. The usual distances for planting all varieties except ribbon are from 18 inches to 2 feet apart in the furrows. One man picks up the plants from the side of the furrows and places one end at the bottom with the buds at the sides and sloping upward toward himself. The slope of a plant, say of 4 rings or tiers of buds, in all about 14 inches long, are sometimes fixed at about 2 inches higher at the end next the planter. In this manner the plant is placed carefully in the furrow, the soil about it, if rough, being broken down and packed round it with the hand. The planter either covers the plants he puts in the ground with 2 or 3 inches of soil, or has another hand to do it with a hoe, the latter, of course, being the more expeditious. In either case the soil is put on carefully so the eyes or buds may not be injured in any way. The planter makes a step forward and puts his heel at the butt of the plant which he puts in, and then inserts another plant in the same way, making his foot a gauge for the distance, the end of the plant coming close up to the toe of his boot, or in 6 or more inches of it, as the case may require. When the line is finished the top of the soil which covers the

plant is about 5 inches under the level of the field. In some cases, when all top plants are used, the upper ends are occasionally allowed to project about 2 inches above the covering soil, but unless it is damp and the plants very fresh they are usually all covered up. Meanwhile the plow has opened the next furrow, which may be 5 or 6 feet from the first, according to the nature of the soil, and the work is thus carried on until the planting is finished. In some cases every tenth or twelfth row is left wide enough to allow the passage of carts; but there is no rule for this, the formation of the ground and the convenience of working the different cane pieces, fields, or patches leading to different arrangements on every plantation. In places tramways are laid down, upon which trucks are run, carrying many tons of cane at a load. These trucks are filled from light carts, which come direct from the men who are cutting, and in this way a vast amount of traveling over and packing of cultivated soil is avoided. Ribbon cane, on account of its sending up from ten to thirty canes from a single shoot, is planted further apart, say 3 by 6 or 4 by 7 feet, according to the strength of the soil and the implements used in working between the rows. The holes for ribbon cane are either run out with the plow or opened with the spade. When the plow is used ten or more furrows are opened, and then it is set to opening other furrows at right angles and at distances decided upon. The places at which the furrows cross are then cleared out with the hoe or spade and the plants put in and covered. The following information in regard to the seasons for planting and gathering the crop, etc., in Australia is supplied by Mr. Angus Mackay. The best time to commence operations as a cane grower is in June.

The temperature is cool then, on an average of about 59°. Rains are common and winds drying, a combination which keeps the soil moist and the surface dry. Clearing, stumping, plowing, and the general preparation of land can be advantageously carried on.

July.—A winter month. Frost is common to the south of the Mary River. Clearing, draining, and general outdoor work; average temperature, 58°; prevailing winds W. and SW.

August.—Frost at the beginning; towards the close cane may be planted to the north of Brisbane and crushing commences. Average temperature, 61°; winds NE. and S.; very little rain.

September.—Planting and crushing general. Average temperature, 65°; winds NE. and SE.; light showers.

October.—Crushing and planting; cane commencing to grow, and active cultivation is necessary to keep the weeds in check. Average temperature, 74°; winds NE. and SW.; thunder showers.

November.—Push on crushing, planting, and cultivation of young cane. Average temperature, 74°; winds NE. and SE.; thunder showers; warm weather; horse labor employed wherever possible.

December.—Finish crushing and attend closely to cultivation. Average temperature, 80°; winds NE. and SE.; occasional showers; frequently a dry month.

January.—General cultivation of cane. Planting has been done during this month, but it is generally considered late. Average temperature, 81° winds NE.; frequent thunder showers; at times a hot, dry month.

February.—Summer heat fully felt, and growth of well-cultivated cane very rapid. Average temperature, 82°; winds SE.; thunder showers frequent and heavy; surface drains a necessity to prevent washing of soil.

March.—Temperature begins to fall (average, 76°); frequent thunder showers and heavy rains call for activity in cultivation; winds NE. and SE.

April.—Active cultivation to get all the canes beyond their soft stage. Average temperature, 70°; heavy rains common; if dry season the rains usually come at this time; effects of floods to be guarded against.

May.—Drainage to be attended to if the land is wet, and general cultivation. Some growers thrash the cane at this time. Average temperature, 65°; winds S. and SE.; close weather, heavy rains, and fogs. Cane should be very nearly full grown, and ripens during the winter.

The westerly winds are dry, gusty, and searching, and shelter from them is desirable. Heavy, cold, gusty storms also come from the same quarter. The other winds are favorable to vegetation. Frosts occur during June, July, and the first week of August, and are most severe during calm, clear nights. The nights during the whole year are cool.

Thirty or forty different varieties of plants are in use in Australia. Mr. Mackay enumerates the following varieties, fifteen in number, from which the most satisfactory results have been obtained:

1. Saccharum officinarum—Tabor socrat. 2. Tabor rappol. 3. Tabor rappol var. 4. Tabor meera. 5. Tabor poetie. 6. Tabor djoengdjoeng. 7. Tabor lielieu. 8. Chigacca. 9. Troeboe. 10. Belonguet. 11. Salangore. 12. Diard. 13. Bourbon or bamboo. 14. Chinese. 15. The Ribbon (red, yellow, and green).

Mr. Mackay estimates the cost of planting on properly prepared land at about £1 ($4.86) per acre, divided as follows: Six shillings ($1.46) for opening flat furrows; 10 shillings ($2.43) for laying down and planting, and 4 shillings (97 cents) for covering. It must be remembered that sugar-cane does not yield an annual crop; hence, in the Government returns, the yield is given as productive and non-productive.

EXTENT TO WHICH SUGAR IS AN ARTICLE OF COMMERCE.

New South Wales as yet is unable to produce as much sugar as she consumes. The largest yield in any one year was in 1886, when the amount was 239,347 tons. In 1885 it was 204,547 tons, but in 1885 it fell to 105,323 tons, the smallest yield since 1877, when it was only 99,430 tons. The quantity of sugar imported into the colony during the year 1887 was 26,292 tons, of which 25,994 tons consisted of raw sugar and 298 tons of refined.

CONSUMPTION OF SUGAR.

The average consumption of sugar per head in New South Wales is about 102 pounds per annum. In a series of interesting and valuable tables prepared by Mr. Edward Pulsford, of this city, the average consumption per head during the years 1884 and 1885, which he regards as fair average years, was 100 pounds per year, against only 93½ per year for Victoria. The following table, showing the methods by which these results were reached, has been very kindly furnished me by Mr. Pulsford:

SUGAR.

		Victoria. *Cwt.*	New South Wales. *Cwt.*
1884.	Imports, duty paid	850,259	597,940
	Less exports, under drawback	86,172	11,564
	Home production	.....	194,956
1885.	Imports, duty paid	963,053	561,888
	Less exports, under drawback	105,414	19,081
	Home production	.....	369,280
Average per head in pounds		93½	100
Deduct for sugar in excess of the exports of jams, confectionery, and biscuits		1	.....
Add for sugar in excess of imports of jams, confectionery, and biscuits		.....	2
		92½	102

An interesting fact in connection with the consumption of sugar in the two colonies is that sugar is not the only luxury which is more largely used in New South Wales than in Victoria. The population of the two colonies is about the same, but the average consumption of tea, currants, raisins, beer, spirits, tobacco, indeed almost every luxury except coffee is heavier in New South Wales than Victoria. In tea the average annual consumption for the years named, 1884–'85, was 127 pounds for New South Wales against 110 pounds for Victoria. In currants the average consumption was 111 pounds in New South Wales against 98½ pounds in Victoria. The average per head in beer in gallons was 16½ gallons for New South Wales and 16 gallons in Victoria. Tobacco averaged per head in New South Wales 46 ounces against 35½ ounces in Victoria. In coffee the average per head was 11 pounds in New South Wales against 16 pounds for Victoria. Mr. Pulsford, to whom I am indebted for this comparison, is very decided in the opinion that the well-being of the two populations can be shown by their relative spending powers. He thinks these comparisons very significant, and in endeavoring to explain why the people of New South Wales consume more sugar, currants, tobacco, beer, spirits, etc., than the people of Victoria, says:

If the people of New South Wales took more spirits and less tea than the Victorians, the case would look different; but when we find that New South Wales is ahead in both intoxicants and non-intoxicants we must be very dull scholars if we can not understand the reason

why. Sugars and dried fruits also, which in the form of lollies and cakes represent so much enjoyment to the children, are bought much more freely in this colony. A portion of this excess is probably due to the fact that the population of New South Wales represents a greater effective or working power than that of Victoria. But this is far more than outweighed by the fact that the average duties on the articles are much higher in New South Wales than in Victoria; thus sugar pays 5*s.* ($1.22) per 100 pounds duty against only 3*s.* (73 cents) in Victoria, and spirits pay 12*s.* ($2.92) both customs and excise, while in Victoria the excise duty is 8*s.* ($1.95) and 10*s.* ($2.43). Of course, if the duties in New South Wales on these articles were as low as they are in Victoria, the consumption in New South Wales would be still larger. Why is it that the people of New South Wales can afford to buy so much more tea, sugar, etc., than their neighbors? Could they buy as much as they do if they had to pay protective duties on many of their other purchases? If a man must pay £2 10*s.* ($12.16) for a £2 ($9.73) suit, has he not 10*s.* ($2.43) less with which to buy tea and sugar?

In 1886 the output of home-made sugar in New South Wales did not exceed 8,500 tons. The imports entered for home consumption for that year into the colony consisted of 15,599 tons of raw and 218 tons of refined. In 1887 the quantity entered for home consumption was 16,814 tons of raw and 216 tons of refined.

It will be seen at a glance from these figures that the sugar-growing industry of New South Wales will have to make a very great stride before it can supply the home demand. The industry would, doubtless, increase more rapidly if the cane could be grown over a wider range of territory instead of being limited to a few localities in the northern coast districts. Possibly in time some of the inland districts, with the aid of irrigation, may prove suitable for the cultivation of sugar-cane.

IMPORTS OF SUGAR.

The subjoined table shows the quantity and value of raw and refined sugar imported into New South Wales for each year since 1887:

Years.	Raw sugar.			Refined sugar.		
	Quantity.	Value.		Quantity.	Value.	
	Tons.			*Tons.*		
1877	22,841	£570,818	$2,777,886	317	£12,277	$59,746
1878	27,458	697,234	3,393,089	215	7,457	36,289
1879	35,108	834,916	4,063,119	233	8,422	40,986
1880	19,765	539,953	2,627,681	157	5,435	26,449
1881	27,164	655,722	3,190,505	295	11,948	58,145
1882	32,491	838,256	4,079,373	142	5,285	25,719
1883	27,527	743,374	3,666,290	98	3,715	18,079
1884	33,579	843,385	4,152,998	458	14,523	70,676
1885	27,362	500,084	2,433,659	366	10,077	49,040
1886	29,981	478,992	2,331,015	218	5,646	27,564
1887	25,994	475,958	2,316,250	298	6,897	33,564

The following table shows the quantity and value of sugar imported into New South Wales during the years 1886 and 1887, with the names of the countries whence imported:

Raw sugar, 1886.

Country.	Quantity.	Value.	
	Tons.		
Great Britain	240	£5,208	$25,344
Victoria	1,801	36,118	175,763
South Australia	561	14,445	70,296
Queensland	14,620	241,772	1,176,583
New Zealand	177	3,252	15,825
Fiji	10,056	126,670	616,439
Hong-Kong	1,261	25,360	123,414
United States	151	3,236	15,747
Mauritius	1,106	22,736	110,644
France	3	70	340
Germany	2	25	121
Belgium	3	100	486

Refined sugar, 1886.

Country.	Quantity.	Value.	
	Tons.		
Great Britain	66	£1,547	$7,528
Victoria	63	1,626	7,913
South Australia	20	683	3,324
Queensland	26	625	3,041
United States	1	20	68
Belgium	15	420	2,043
Germany	27	715	3,479

Raw sugar, 1887.

Country.	Quantity.	Value.	
	Tons.		
Great Britain	704	£13,748	$36,904
Victoria	2,807	56,104	243,826
Queensland	14,794	268,469	1,306,504
South Australia	757	16,804	81,776
New Zealand	194	4,067	19,792
Tasmania	10	209	1,017
Hong-Kong	2,451	48,494	235,996
China	189	3,312	16,118
Fiji	3,354	50,908	247,739
United States	450	8,460	41,170
Germany	203	3,653	17,777
France	57	1,250	6,083
Egypt	24	480	2,336

Refined sugar, 1887.

Country.	Quantity.	Value.	
	Tons.		
Great Britain	93	£1,987	$9,670
Victoria	114	2,725	13,361
South Australia	43	1,211	5,893
Queensland	2	50	243
United States	26	490	2,384
France	6	134	652
Germany	4	96	467
Belgium	10	204	993

EXPORT OF SUGAR.

Thus far sugar growers, as previously stated, have not been able to grow a sufficient quantity of sugar for home consumption, much less for export. It is true enough that sugar is exported, but very little of it is the product of the colony, the bulk of the exports being sent here for transshipment to other places. Out of the total export, 116,061 tons for 1887, only 500 tons were produced here, and this was sent to be worked up in the refineries in Queensland. In 1877 the quantity of sugar exported was 1 ton of raw—the product of the colony—and 4,070 tons of refined sugar, the latter principally of foreign manufacture, valued at £140,469 ($683,592). In 1878 the exports were 4,228 tons of refined sugar, valued at £170,323 ($828,877). In 1880 the exports were 5,265 tons, valued at £171,413 ($834,181). The following year there was a decline to 3,655 tons, valued at £116,944 ($569,108), and in 1887 the export of refined sugar amounted to only 18 tons, but there were 5,803 tons of raw sugar exported, valued at £110,024 ($535,432).

The subjoined table shows the quantity and value of raw and refined sugar exported from New South Wales for each year from 1877 to 1887, inclusive:

Raw sugar.

Year.	Quantity.	Value.	
	Tons.		
1877	403	£14,040	$68,325
1878	502	15,608	75,956
1879	1,522	42,309	205,897
1880	1,779	57,625	280,432
1881	688	20,521	99,861
1882	830	24,685	120,130
1883	778	21,902	107,586
1884	1,284	32,543	158,371
1885	1,846	36,667	178,440
1886	5,818	108,877	530,850
1887	5,803	110,024	535,432

Refined sugar.

Year.	Quantity.	Value.	
	Tons.		
1877	4,070	£140,469	$683,592
1878	4,228	170,323	828,877
1879	5,281	170,638	830,410
1880	5,265	171,413	834,181
1881	3,655	116,944	569,108
1882	2,438	77,258	375,976
1883	2,014	61,429	298,944
1884	1,229	37,725	183,589
1885	111	3,366	15,894
1886	23	745	3,626
1887	18	501	2,438

The following table shows the quantity and value of raw and refined sugar exported from New South Wales during 1886 and 1887, with the name of the countries to which exported:

Raw sugar, 1886.

Country.	Quantity.	Value.	
	Cwt.		
Great Britain	274	£267	$1,299
Victoria	56,665	54,506	265,248
South Australia	1,716	1,514	7,368
Tasmania	5,349	5,159	25,106
New Zealand	3,516	3,171	15,431
Queensland	2,701	2,677	13,027
South Sea Islands	757	711	3,400
New Caledonia	2,346	2,173	10,575
Fiji	86	84	409
Western Australia	1,503	1,479	7,197
Hong-Kong	39,251	35,015	170,395
China	1,805	1,806	8,789
United States	334	303	1,474
New Guinea	7	7	34
Kaiser Wilhelm's Land	5	5	24

Refined sugar, 1886.

Country.	Quantity.	Value.	
	Cwt.		
Great Britain	21	£29	$141
Victoria	50	75	364
Tasmania	45	79	384
New Zealand	27	41	199
South Sea Islands	14	29	141
New Caledonia	304	482	2,345
Fiji	6	10	48

Raw sugar, 1887.

Country.	Quantity.	Value.	
	Cwt.		
Great Britain	183	£172	$837
Victoria	83,686	97,372	473,855
South Australia	3,723	3,559	17,319
Tasmania	17,779	17,015	82,803
New Zealand	723	726	3,533
Queensland	3,745	3,538	17,217
Western Australia	268	247	1,202
South Sea Islands	955	851	4,141
New Caledonia	4,062	3,586	17,450
Fiji	23	20	97
Germany	12	12	58
United States	102	90	437
Norfolk Island	77	62	301
Hong-Kong	273	228	1,109
China	11	10	48
Kaiser Wilhelm's Land	39	36	175

Refined sugar, 1887.

Country.	Quantity.	Value.	
	Cwt.		
Great Britain	13	£19	$92.00
Victoria	1	2	9.73
Tasmania	2	4	19.00
New Zealand	20	28	136.00
Queensland	63	79	384.00
South Sea Islands	10	15	72.00
New Caledonia	239	339	1,649.00
Fiji	1	2	9.00
United States	3	6	29.00
Hong-Kong	4	7	34.00

PRICE OF SUGAR.

The price of sugar is not influenced by the seasons, but by the extent of the rates ruling in the outside markets. Prices have fluctuated very little during the last few years. They have ranged from £15 ($72.99) to £18 ($87.59) per ton for raw, and from £22 ($107.06) to £26 ($126.52) per ton for refined sugar.

PRICE OF RICE.

The best rice imported into Australia is from Japan, and costs about £10 ($48.66) per ton aboard ship at Yokohama. It comes packed in 56-pound Hessian bags. It is usually quoted at so much per picul (a Japanese and Malay weight of 133⅓ pounds). The fluctuation, like that of sugar, is very slight during the year. The price, in a measure, depends on the quantity in market and the prospects of the coming crop. The quotations during 1887 varied from 12*s.* ($2.92) to 12*s.* 6*d.* ($3.04) per picul. There is a cheaper rice, unhulled, imported from Singapore, and called Singapore rice,

which usually sells from £7 7*s.* 6*d.* ($35.88) to £7 10*s.* ($36.49) per ton. There is always more or less demand for this quality, almost every steamer from Singapore bringing a supply. Considerable quantities of rice are imported for coolies, and this comes from Rangoon, Sagon, and Ballam. It is packed in bags of 256 pounds, and between 10,000 and 12,000 pounds usually arrive here every year for transshipment to Fiji. The Ballam rice is quoted at lower figures than that from Rangoon and Sagon.

DUTIES ON RICE AND SUGAR.

Rice pays a duty of £3 ($14.59) per ton, and rice flour 1*d.* (2 cents) per pound. Sugar is taxed at 5*s.* ($1.22) per 100 pounds for raw, and 6*s.* 8*d.* ($1.60) per 100 pounds for refined.

COST OF FREIGHT.

The cost of freight from Hong-Kong, Singapore, and Yokohama per steamer to Sydney varies from 12*s.* 6*d.* ($3.04) to 17*s.* 6*d.* ($4.26) per ton. At present the rates are very low, say from 14*s.* 6*d.* ($3.53) to 15*s.* 6*d.* ($3.77) per ton. The cost of freight on sugar from China per steamer is about £1 10*s.* ($7.29) per ton, none coming by sailing vessels. The average rate of freight on raw sugar from Java is £1 ($4.86) per ton. Very little or no refined sugar reaches here from Java, the bulk of the raw sugar being used for refining purposes by the Colonial Sugar Company at Sydney. —SYDNEY, *June 11, 1888.*

G. W. GRIFFIN.
Consul.

RICE AND SUGAR IN CEYLON.

Ceylon does not produce grain for export. Indeed, it imports largely, the figures for local production and imports of paddy and hulled rice averaging per annum about 8,500,000 bushels for production against 6,200,000 imported. About 2,000,000 bushels of this go to provide for the consumption of immigrant coolies employed by European planters, the balance being consumed by permanent residents, numbering 2,700,000. This would provide less than 5 bushels per year for each inhabitant, to say nothing of the paddy that is fed to animals, principally horses, and to fowls, etc.

These figures, if unexplained, would lead to an inference that the Ceylonese were poorly fed, which, however, would be erroneous, as about one and a half million bushels of fine grain (millet, pulses, etc.) are grown, also a great variety and abundance of indigeneous vegetables and fruits, including the food products of the cocoa-nut and other palms—all of which contribute largely to the dietary of the people.

The yield of paddy is comparatively small, probably about 15 bushels to the acre, and crops are often lost through a careless mode of cultivation by which the fields are left open to inundation from swollen streams in times of flood. Very little manuring is done, and the ancient wooden plow, more

properly a drill, is generally used to little more than scratch the ground as a preparation for planting.

The price of table rice in Colombo at retail averages 3 rupees ($1) per bushel, and commoner sorts, such as are used by the masses, 2 and 2½ rupees per bushel, *i. e.*, $0.67 and $0.83 respectively.

As a matter of fact, the upland rice of Ceylon is more nutritious than almost any that is imported, and, as a rule, the Singhalese *goya* (cultivator) prefers the grain of his own growing to any other, just as some New England farmers prefer the poor wheat they sometimes cultivate with great difficulty to the better article that is so easily and abundantly grown in other parts of America.

The following table, copied from the Ceylon Hand-Book for 1885–'86, gives the different descriptions of grain grown in the island, and the number of months they require for maturity, which, together with the foregoing, is probably about all that can be usefully written on this subject:

Fine grain.	*Mos.*	*Paddy.*	*Mos.*
Badde Amoo	3	Kalloo Dahanella	3
Mendirye	3	Soodoo Katyaran	3
Soodoo Dahanella	3	Rattu Dahawalla	3
Rattoo Tanna	3	Soodoo Dahawalla	3
Godde Rawelle	3	Maha Mawee	3
Kalloo Tanna	3	Kooroowee	4
Godde Koorowa	4	Yattoo wee	4
Koorookan	4	Kaloo Katyaran	4
Tanna	4	Himity	4
Soodoo Elwee	5	Kalloo hinity	4
Rat Tell or Sooroo wee	5	Hondrallawa	6
Kittool Pattel	5	Soodoo Hondrallawa	6
Godde Hondrawella	6	Surroo wee	6
Kalloo Koomaraya	6	Mawee	7
Elwee	6	Happoo Daycrajah	7
Amoo	6		
Handoow Kottau	7		
Mee Patell	7		

Sugar is not largely produced in the island, there being not over 1,000 acres under cultivation with that product. Much capital, though, has from time to time been invested in that industry, and many plantations were opened in past times both in the low country and in the Central Province, as high up as 1,600 feet above sea level. All of those efforts have proved fruitless, however, except in one instance, at Baddegama, in the Southern Province, where some sugar (not much) is still grown and manufactured for local consumption. Considerable jaggery (a coarse native sugar) is manufactured from palms, principally kittul (*Caryota urens*) and palmyra; also from the cocoa-nut palm. Small patches of canes are grown in the native gardens and sold in the bazaars to the natives, who are fond of chewing them as a delicacy.

The trouble in Ceylon about producing sugar has never been a want of canes, for they grow luxuriantly, but they seem to be somewhat deficient in saccharine matter.

The imports to Ceylon in 1887 are set forth in the following table, kindly furnished by the collector of customs at Colombo:

	Cwt.	*Value.*
Sugar, refined, and sugar candy:		
England	1,488	
India	11,920	
China and Singapore	2,871	
Mauritius	422	
Other countries	40	
	16,741	$168,881
Unrefined:		
India and China	19,163	97,705
Palm and jaggery from India	5,576	9,257
Grand total	31,480	$275,841

W. MOREY,
Consul.

COLOMBO, *April 25, 1888.*

SUGAR IN BRITISH HONDURAS.

The sugar industry of the colony of British Honduras was at one time one of the principal sources of wealth for the colony—the exports amounting in the year 1880 to 2,807 tons (English). Since that time the production of sugar for export has steadily decreased, owing, no doubt, to the competition of beet sugar and the low wages of the laborers of Cuba and other sugar-producing countries. The following is the amount of sugar (in English tons of 2,240 pounds) exported from the colony for the years 1879 to 1887, inclusive: 1879, 2,002; 1880, 2,807; 1881, 1,931; 1882, 2,572; 1883, 2,023; 1884, 2,383; 1885, 1,674; 1886, 714; 1887, 952.

The exportation for the years 1886 and 1887 were to the following countries:

Country.	1886.		1887.	
	Pounds.	Value.	Pounds.	Value.
United States	572,063	$18,573	983,670	$30,004
United Kingdom	928,068	38,181	1,022,463	32,966
Guatemala	18,517	886	18,125	677
Honduras	41,666	1,995	36,697	1,828
Nicaragua	40,592	2,009	53,789	2,333
Bahamas	.....	.....	16,200	695
Caymans	.....	.....	2,750	128
Total	1,600,906	$61,644	2,133,694	68,631

The low prices caused by the competition above mentioned has had the effect of causing the larger planters to discontinue the growing of sugar for export, and several of them have been ruined and were sold out for the benefit of their creditors. One planter, with a large acreage of cane ready to

grind, decided that it would not pay to take it off and turned his cattle loose on it. A few of the smaller planters still find it profitable to make a fair grade of sugar, known in the States as "open kettle," for sale in the colony and surrounding Republics. The duty (3 cents per pound) is a protective one as far as the trade of the colony is concerned. Some of them also make rum, of which there was exported in the year 1886 25,411 gallons, valued at $39,152. There is probably an equal amount used in the colony. This is a very profitable business, as the molasses and sugar that would be unfit for export can be used for this purpose.

A number of those who have discontinued growing cane have turned their attention to raising fruit for the New Orleans market. Thus far they have been very successful, and the prospects for the near future are very bright.

The taxes on plantations are extremely light, viz, $1 per year on those of less than 10 acres in extent and $2 per square mile on those exceeding it. Licenses on stills are $50 per year on every still of 100 gallons capacity and $10 additional for every additional 100 gallons capacity, and an excise duty of $1 per gallon on all rum consumed in the colony.

There is no sugar refined in the colony, and the bulk of it is imported from the United States. The imports of sugar for the year 1886 were: United States, 64,760 pounds, valued at $2,759; Great Britain, 2,798 pounds, valued at $168; total, 67,558 pounds, valued at $2,925. The imports for 1887 were: United States, 55,906 pounds, valued at $2,337; Great Britain, 2,635 pounds, valued at $131; total, 58,541 pounds, valued at $2,468.

There are no export duties levied in the colony at present. The suggestion has been made that an export duty should be levied on fruit, as the mail steamers are subsidized largely on the grounds of giving regular service so as to encourage the growing of fruit for export. The import duty on sugar is 3 cents per pound.—BELIZE, *March 1, 1888.*

ALBERT E. MORLAN,
Consul.

SUGAR AND RICE IN SIVAS.

No sugar is grown in this consular district. Rice is grown to a very limited extent in the neighborhood of Tocat and Amasia. The average annual production in the province of Sivas amounts to only about 35,000 pounds. It is mostly of the yellow variety and poorer quality. Rice is a principal article of food, but is mainly imported from East India and Egypt. The wholesale price averages about 3½ piasters per oka = 5 cents per pound.

I have delayed complying with the Department's circulars, hoping to get some official figures as to the amount, yield per annum, etc., of the Amasia and Tocat rice, but have been unable to obtain anything reliable.—SIVAS, *May 10, 1888.*

H. M. JEWETT,
Consul.

WHALERS AT ST. HELENA.

The whalers (all American) engaged in the south Atlantic seas, recruited here as usual twice during the year, and the trading schooner *Lottie Beard*, of New Bedford, made her usual two half-yearly trips from that port to St. Helena, bringing general merchandise, the produce of the United States, and taking from hence full cargoes of oil and bone transshipped from the American whaling vessels.

About 1,000 cases of paraffine oil, the produce of the United States, were imported here during the year from the Cape of Good Hope in addition to what was brought here by the *Lottie Beard*. This article is now being sold here at $2.50 per case. The customs charge is 25 cents per case.

The annual consumption of flour at St. Helena is about 200 tons, the greatest proportion of which is imported from Australia in sacks, costing, landed here, from $6 to $7 per sack of 200 pounds. Not more than about 200 barrels are brought from America. The customs charge is, on sacks, 1 shilling, and on barrels, 2 shillings each.—ST. HELENA, *July 10, 1888*.

THOS. B. FOWLER,
Vice-Consul.

SUGAR AND RICE CULTURE IN THE PHILIPPINE ISLANDS.

Sugar may be said to be the leading production of the Philippine Islands, and in the cultivation of the cane and the preparation of its yield for the markets of the world a greater number of hands are employed than in any other single pursuit. While hemp is considered, perhaps, a very formidable rival of sugar, it requires less labor in the preparation for shipment, and the processes by which it is made marketable are simpler and more easily worked than those necessary in the preparation of sugar. The majority of the native population from the extreme north of the Archipelago to Albay, which is near the southernmost extremity, are engaged with more or less activity in the culture of the cane. South of Albay the country is given up almost exclusively to hemp. The method of cultivation is similar to that adopted by the sugar planters of other countries. When a new field is to be planted the ground is thoroughly plowed with a team of "caribous" or water buffaloes, the only animals used for heavy work. They are cheap and plentiful, and are probably the only beasts of burden that could endure this climate. The plow is usually a very primitive affair—a heavy stick of wood sharpened to a point at one end, with a beam attached by rattan thongs about two feet above the point to which the buffaloes are hitched, and with a handle for the plowman at the upright end, consisting of a round bar of wood inserted in an auger hole. There are a few plows of modern design in use, but none, I believe, of American make. The slips of cane, gathered from an old field, are planted in May, about 2 feet apart in rows, and are left to their fate. Occasionally during the season the weeds are hoed out, but, as the natives work very deliberately and do not exert themselves any more than is considered absolutely necessary, the cane receives very little more attention than

is required to prevent the weeds from taking full possession of the field. The cane is cut at any time between December and May that the inclination of the owner or his domestic necessities may prompt. The crop is repeated for several years from the same roots. The cane is crushed in a mill of English or German manufacture, very few planters being without one, and the juice is boiled the proper length of time and poured into cone-shaped vessels called "pilons," which hold about 5 gallons each.

It may be proper to call attention to the fact that nearly, if not quite all, the machinery and agricultural implements in use in these islands are of German or English manufacture, as the American and Spanish prices for such articles are considered excessive. No American manufacturer can hope to compete with the English or German in this part of the world until the cost of production and export is so reduced as to enable him to offer his goods at lower prices. I find that American goods are preferred here to those of any other country, as they are considered better in every respect, but not enough so to warrant the payment of the prices asked. It is considered very probable that within a short time there will be a great market here for agricultural implements and other machinery, as two railroads have been projected and there are other indications of material progress and enlightenment, and American manufacturers can gather a large share of the harvest if it is possible for them to make their prices somewhere near those of their English and German competitors.

In the bottom or apex of the cone-shaped pilon referred to is a hole about an inch or an inch and a quarter in diameter, and when the boiled cane-juice has hardened, the sugar maker inserts one finger in this hole, breaking the crust of sugar which has formed over it, and releasing the dark thick molasses from the lower center of the sugar-cone, where it has settled and will not crystallize. This leaves in the pilon a partially hollow cone of hard dirty-brown rock sugar about 2 feet high and about 12 or 14 inches in diameter at the base. The molasses, after exposure to the air, thickens to about the consistency of "mush," and the major portion of it is shipped to England as "wet sugar," where it is used quite largely in the manufacture of different articles of food, in brewing, and for other purposes for which it is not in demand in the United States. Very little of it finds its way to our country.

The hard or cone sugar is used by the natives just as it leaves the pilon, being broken into small lumps with which to sweeten their food. For shipment abroad, and for the consumption of resident foreigners, it is passed through various processes of refinement, producing four grades of sugar, viz: Second white, extra, superior, and taal. None of the second white was shipped to the United States last year, but there was shipped to the Atlantic ports and San Francisco 537,720 piculs of the extra, 1,418,570 piculs of the superior, and 19,667 of the taal.

It is hardly possible to make anything like an accurate estimate of the yield of sugar and rice per acre, owing to the difference in the character of the soil of the islands, Panay, for instance, producing more sugar to the acre

than Luzon, and about the same average amount of rice. A reasonably fair estimate would be from 13 to 20 piculs of sugar to the acre and from 30 to 40 cavanes of rice, or 3,750 to 5,000 pounds.

The consumption of sugar is comparatively small, the natives using very little of it in their food. Their diet is principally rice, fish, yams, and fruit, with a little meat sauce or gravy occasionally. The sugar they use is the brown rock as it comes from the pilon. Only a rough estimate of the consumption can therefore be given. Quite a large proportion of the population of these islands is composed of savage tribes, who inhabit the mountainous districts and who do not recognize nor submit to the dominant authority. The Spaniards have never undertaken to subdue them, for reasons best known to themselves, and as the natives do not molest them unless they venture too far into the mountain fastnesses all parties get on quite peaceably. These tribes undoubtedly consume some sugar, which is probably obtained from the civilized natives. Considering the amount of refined sugar—the product of a refinery operated by an English corporation at Malabon, near Manila—consumed by the foreign residents, a comparatively fair estimate of the consumption would be 2 pounds per family per week. Estimating on the basis of a total population of 7,636,632, the figures given by the last census report, with an average of four persons to a family, would make the total consumption for 1,909,158 families 3,818,316 pounds, or about 32,000 piculs or 2,000 tons per week.

In estimating the cost of cultivation we find that labor is a very uncertain factor to deal with, owing to the fact that the almost invariable rule is to work sugar plantations on shares. Nearly all the cultivated land is owned by foreigners, who leave to the natives small patches upon which the latter build their bamboo huts and make their homes. The whole family work in the field, and they turn over to the owner such a proportion of the cane or raw sugar as may have been agreed upon for rent. Of course, there is no regular scale of shares, but the owner usually manages to get the heaviest end of the deal. The natives are simple, improvident creatures, whose wants are few and who can easily live on 2 or 3 cents a day. The torrid climate renders clothing unnecessary, except to fulfill the requirements of modesty. The numerous streams teem with fish. Rice is cheap, and yams, bananas, and various other nutritious vegetables and fruits grow wild everywhere in abundance. Hence the unsophisticated native is willing to take very little for his share of the produce of his patch of ground. It has been estimated that the average cost of producing sugar is from $1.25 to $2 per picul. The highest selling price here last year was $4.25 per picul and the lowest $2.87½, Manila currency.

As an article of commerce sugar ranks next to hemp. Last year there were 2,866,383 piculs exported, and in 1866 2,972,789, while in 1885 the amount exported was 3,255,850. The smallest amount shipped in one year during the past twenty was in 1869, when the export amounted to only 1,101,081 piculs, while the largest year's export of the past twenty was in

1881, when the figures reached 3,362,572 piculs. Of last year's shipments 1,975,957 piculs went to the United States; 478,193 to England; 72,165 to Spain, and 340,068 to China. In 1886 2,158,227 piculs went to the United States, while England received 423,174; Spain, 87,096, and China 394,292. In 1885 the United States received 2,296,418 piculs; England, 532,666; Spain, 66,769, and China, 359,970. Of last year's shipments to the United States, 72,000 piculs went to California, and the balance (1,903,957) was about equally divided between New York and Boston. In 1886 California received 64,000 piculs and in 1885 77,260. I am informed that Spreckels, of San Francisco, has contracted for a large amount of sugar to be shipped from here this year; 161,100 piculs have already gone to that port since the 1st of April, and more is now being loaded.

As hemp has generally been considered the leading product of the Philippines, the following table, showing the comparative shipments of that article and sugar, may be of interest:

Sugar.

Years.	Atlantic ports of the United States.	Great Britain.	California.	Continent of Europe.	Australia.	Singapore.	China.	Total.
	Piculs.	*Piculs.*	*Piculs.*	*Piculs.*	*Piculs.*	*Piculs*	*Piculs.*	*Piculs.*
1881	1,266,696	1,742,503	79,190	151,541	49,920	37,454	35,268	3,362,572
1882	1,214,519	1,074,858	33,300	66,401	29,940	10,400	23,533	2,451,951
1883	2,226,503	884,664	141,980	147,431	.....	.....	2,921	3,403,499
1884	1,235,050	299,541	199,000	129,163	.....	.....	104,045	1,966,799
1885	2,219,158	532,666	77,260	66,796	.....	.....	359,970	3,255,850
1886	2,094,227	423,174	64,000	87,096	.....	145	304,147	2,972,789
1887	1,903,957	478,193	72,000	72,165	1,420	134	338,514	2,866,383
				Hemp.				
1881	506,722	297,526	39,000	894	19,092	4,518	1,152	868,904
1882	353,042	285,038	28,600	318	33,504	5,390	1,452	707,344
1883	353,340	334,302	18,800	170	33,732	5,010	1,516	746,870
1884	336,148	427,154	14,862	1,422	26,140	4,040	5,852	815,618
1885	388,618	381,838	16,134	1,222	26,744	700	19,004	834,260
1886	346,122	328,296	26,300	1,726	19,474	760	20,686	743,364
1887	491,690	454,576	31,056	4,082	29,596	2,160	16,786	1,029,946

There is no regularity in the price of sugar, nor is it governed by local conditions. The highest price reached during the past twenty years was in 1877, when it ranged from $6.75 to $4.37½ a picul, Manila currency. The lowest was last year, when, as stated above, the highest price was $4.25 and the lowest $2.87½. The price for dry sugar is fixed by the New York market and for wet by London. All the sugar shipped to the United States goes by sailing vessels, while nearly all that goes to England is taken on steamers. There are usually from two to six American ships in Manila Bay loading with sugar, and one or more at Cebu and Iloilo, the two other prominent shipping points. The bulk of the sugar, however, comes to Manila

by coasting vessels from the smaller ports and by steamer from Iloilo and Cebu. In 1886 Cebu shipped direct to the United States and Europe 290,240 piculs and last year 285,040. Iloilo shipped 1,334,298 piculs in 1886 and 1,244,831 in 1887. With the completion of the Manila and Dagupan Railroad, it is expected that a district will be opened to commerce that will largely increase the receipts of sugar at Manila from the interior. It will undoubtedly also very materially stimulate the cultivation of sugar and rice in a district where at present the facilities for transportation are so meager that there is no inducement for the natives to cultivate these staples extensively. At Manila, of course, the shipping facilities are ample, and coolies are abundant and can be hired very cheaply.

The freight rates for sugar to the United States last year ranged from $5.50 to $6.00 per ton, and are at present from $6.50 to $7.50, owing, probably, to a temporary scarcity of ships here. There has been a steady decline in rates since 1873, when they ranged from $11 to $22.50. The rate to Great Britain for sailers is from $5 to $6.50 per ton.

RICE.

Rice is not an article of export here at present, as there has not been enough raised for home consumption. Large quantities are imported from Saigon, and, although this grain is the natives' staff of life, the importance of raising enough to supply the home demand has never apparently been felt. One million three hundred thousand piculs were raised here last year, and nearly a million piculs were imported. The most potent reason probably for this state of affairs is the fact that it requires more labor and care to raise and harvest a crop of rice than are necessary for any other food product. The enervating climate and the absence of the absolute necessity of work by the natives, who can easily gather their provisions from the woods and streams without cost, breeds a spirit of laziness and listlessness decidedly inimical to labor. If the native could put in his rice crop in May and gather it in September, without being obliged to give it much attention in the meantime, there would undoubtedly be plenty of this nutritious grain exported from these islands, but he finds sugar and hemp produced with so much less trouble and more profit that he gives them almost his exclusive attention when he works. Still, the average annual production is nearly a million and a half piculs, and almost a million piculs are imported.

The method of cultivation is practically the same throughout the East. A square sink of about an acre is excavated about a foot below the surrounding surface, a large unfenced space being divided into a number of squares, the dividing lines forming well-shaped square walls of mud and turf about 2 feet wide on the top and from 1 foot to 18 inches high. Paths are formed on these walls, which the natives traverse in going to and from their homes. Along the sides of these paths the grass grows luxuriantly, and in it the deadly paddy snake lies in wait to nip the native heel. After the rainy season has commenced the earth in the squares is thoroughly plowed, and they are

allowed to fill with water. As soon as the earth has settled a rude implement like a harrow, made entirely of wood, is drawn to and fro, mixing the earth and water until it is very soft mud. In the meantime the seed rice has been planted in another field similarly prepared, and has been allowed to grow to the height of about 6 inches. After the tops have been cut off and the blades have again grown about 2 inches more, they are taken up and transplanted in the field first described. The transplanting is done in the latter part of July and the grain is harvested in December. It is placed on the market in two forms—as clean rice of various grades, and as "paddy," or unhulled rice, which is fed to horses, cattle, and fowls.

A family of four persons will consume about 200 pounds of rice per month. It is used in almost every dish cooked by the natives and takes the place of bread. It is estimated that its production costs about 62 cents per cavan of 125 pounds. The price at which it sells here ranges from $1.50 to $2.50 per cavan, it being much cheaper during the harvest time than in March and April.—MANILA, PHILIPPINE ISLANDS, *May 15, 1888.*

ALEX. R. WEBB.
Consul.

SUGAR IN NEW ZEALAND.

Rice is not one of the productions of this colony, and while sugar is not grown here it is, nevertheless, imported in a raw state and refined, and its manufacture is regarded as one of the industries of the colony. It might be well to state that the cultivation of the beet with the view of the manufacture of beet sugar is in contemplation, and it is confidently believed that the business will be commenced and carried on successfully in a short time. Tests have been made and it is found that the soil and climate are peculiarly well adapted for growing the sugar-beet.

IMPORTS OF RAW MATERIAL.

Raw material for sugar-making is imported from the Fiji Islands and Java, while the refined article is imported principally from the Australasian colonies, Great Britain, the United States of America, Mauritius, and the South Sea Islands. The raw material for the last year imported and used for making sugar was from the following countries, with the quantity and value as here given:

	Cwt.	Value.
Fiji Islands	21,980	$91,763.90
Java	49,300	173,792.00
Total	71,280	265,555.90

The figures for the present year are not obtainable, but it is safe to say that they will not vary much from the above.

REFINED SUGAR IMPORTED.

The refined sugar last year was imported from the following countries, with the quantity and value as shown in the table:

Table showing from what countries and the quantity and value of refined sugar imported into New Zealand during 1886.

From what country.	Quantity.	Value.
	Cwt.	
United Kingdom	7,547	$40,256.60
Queensland	36,110	165,192.60
New South Wales	49,079	214,511.50
Victoria	28,130	151,162.00
Western Australia	16	90.00
Tasmania	187	779.64
Fiji	16,328	79,463.00
Hong-Kong	20,151	103,403.00
Mauritius	117,176	576,043.00
United States of America	10,146	57,002.52
China	3,542	15,479.63
Germany	400	1,500.00
South Sea Islands	12	87.00
Total	383,824	1,403,970.49

The quantity and value of refined sugar imported may be taken as a fair annual average. Glucose, molasses, and treacle are likewise imported into the colony. The quantity and value of glucose imported in 1887 was 4,596 hundred-weight, of the value of $6,754.45. Of the glucose imported there came from the United States of America 2,155 hundred-weight, of the value of $6,149.20.

SUGAR IN NEW ZEALAND.

The materials for making sugar are not grown in New Zealand, but are imported, and sugar is made and refined here. A large quantity is used in beer. There were about 9,000 tons refined here during the year 1887. The sugar-works on the Waitemata Bay, near this place, turn out a large quantity of fine sugar, supplying the trade in the colony and exporting a small quantity to the islands of the Pacific.

As before stated, the quantity refined in the year 1887 from the raw materials imported was about 9,000 tons. Import of raw sugar, 198,340 hundred-weight; refined sugar, 279,920; glucose, 6,634; molasses-treacle, 3,741. The export is so trifling in quantity that it is hardly worth stating.

THE PRICE OF SUGAR.

There are three grades of sugar in use here. These grades are classified and designated by the numbers 1, 2, and 3. The table of weights and measures in use here is the English, and is, therefore, different from that of America, 1 ton being 2,240 pounds. The following are the wholesale prices prevailing here:

No. 1, per ton	$131.39
No. 2, per ton	126.52
No. 3, per ton	111.98

The retail prices are as follows:

	Cents.
No. 1, per pound	7
No. 2, per pound	6
No. 3, per pound	5

The Government statistics estimate the consumption per family, of white population only, at 482 pounds, or about 92 pounds per head of population; but as these figures are disturbed by the quantity used for beer, which would make a reduction of say 12½ pounds per head, and of the consumption by the Maori population (original inhabitants of New Zealand), which is considerable, the figures, it will be seen, are less reliable than might be desired. A gentleman, whose family consists of six persons, gives the estimate for such a family at 33 pounds per month, or 396 pounds per year. Another estimate is given of a family of four persons (two being children) wherein the quantity consumed is 20 pounds per month, or 240 pounds per year. These estimates may be taken as fair averages of the consumption by families throughout the colony.

A new sweetening substance called saccharine has been introduced into New Zealand, but I believe it has not gone into use to any extent as yet. It is made from coal-tar, and is said to be three hundred times sweeter than sugar. It is a white crystalline powder very much like fine granulated sugar, and it is claimed to possess three hundred times the sweetening power of cane sugar. It is a simple sweetening condiment, giving to the taste the sensation of sweetness, and is healthy in its uses. It undoubtedly will be extensively used in pharmacy, fruit-preserving, jam-making, and in brewing. I have no doubt it is well known, but having but recently been introduced into New Zealand, I call attention to it as a substance well calculated to materially affect the production and consumption of sugar should it possess the qualities claimed for it.—AUCKLAND, *May 18, 1888.*

JNO. TYLER CAMPBELL,
Consul.

METHOD OF DETECTING ADULTERATIONS IN OLIVE OIL.

Southern France has of late years suffered seriously from the adulteration, or rather the artificial fabrication, of her two principal agricultural products, wine and olive oil. During the recent season of scanty vintages there has grown up in this district an immense manufacture of "piquettes," or raisin wines, which are made by soaking in water until fermentation takes place, the cheap dried grapes which are imported in vast quantities from the Grecian Archipelago and Turkey. These substitutes have so far replaced the real but more costly French wines that now—since the replanted vineyards begin to yield more abundantly—the genuine ordinary wines command only prices which hardly repay the cost of culture.

The consumption of vinous beverages among the laboring classes has not diminished, but the cheaper substitute has crowded out the real article, and in behalf of the agricultural class it is proposed to remedy this unnatural difficulty by putting a heavy import duty upon dried grapes from the Levant.

With olive oil the case is similar, but even worse. Only a small portion of France is adapted to olive culture, the entire available district being a strip of dry country less than 200 miles wide along the Mediterranean coast. The tree is of slow growth and is, moreover, beset by numerous insects and diseases, which, in addition to unfavorable phases of weather, render the yearly olive crop more or less uncertain. Any serious reduction in the annual consumption of olive oil is sufficient to reduce its market value below the point of profitable culture. This has been done by the now nearly universal practice of adulterating or diluting the olive oils of Nice and Provence with various seed oils, viz: Sesame, peanut, poppy-seed, cameline, and especially cotton-seed, which last, by reason of its cheapness, palatable flavor, and difficulty of detection, has of recent years nearly supplanted all the others as an adulterating material.

The rank, low-priced olive oils from southern Italy (Bari), Algeria, and Tunis have been brought here in vast quantities, diluted with cotton or sesame, and been consumed and exported wholesale in place of the fine, delicate, high-grade oils of the Var and Bouches du Rhone, which have thus been nearly elbowed out of the market. This has so reduced the value of olive oil in southern France that the government has set itself seriously to the task of providing a remedy. The first step was to discover some method of detecting such adulterations which should be not only exact in its results, but sufficiently simple to be practicable for farmers, dealers, and ordinary consumers. It was stated in a report which was made from this Consulate in February, 1888, that no such process was then known. As late as the 17th of May last a meeting of the Scientific and Industrial Society of Marseilles was addressed by Mr. Ernest Millian, an accomplished analytical chemist, who reviewed elaborately all of the known processes, and admitted that none of them were sufficiently delicate and exact to detect an adulteration of less than 10 per cent. The "Cailletet" process, which consists in treating the oil with a mixture of sulphuric and nitric acids, has been hitherto generally employed, but this was declared by Mr. Millian untrustworthy unless the degree of adulteration exceeded 20 per cent.

The "Bechi" process, now used by the Italian Government, will detect an admixture of 15 per cent. of cotton-seed oil, provided the sample analyzed contains no glycerine, formic acid, or free fatty acids, any one of which, even in minute quantity, is sufficient to mask the chemical reaction upon which the process of Signor Bechi depends.

Mr. Millian then described a new method, invented by himself, which consists in treating with heat the saponified products of the oil in acoholic solution with nitrate of silver. This, however, is a process for the laboratory of the accomplished chemist, and is not adapted to general use. The same is true of the "Levallois" process, which has been used by experts in cases of real importance with more or less questionable results, the analysis in one notable instance having given the same result from a sample of pure olive oil and another which was known to contain 20 per cent. of cotton-seed.

Finally, as it would seem, the long-sought-for process has been discovered by Mr. Brullé, chemist of the Agronomic Station at Nice. His discovery was announced to the Academy of Sciences in April last and has been since subjected to an elaborate series of tests and experiments by a commission specially appointed for the purpose by the Agricultural Society of the Alpes-Maritimes.

Mr. Brullé began upon the known principle that vegetable oils, when oxydized by the application of certain acids, assume different shades of color. He then hit upon the use of albumen to fix and accentuate these delicate graduations of tint. The report of the commission has recently been published and gives the process of Mr. Brullé such complete and unqualified endorsement, both for its simplicity and the exactness of its results, that the subject assumes a practical importance not only to the countries which produce olive oils but to those which, like our own, import them as costly luxuries for general consumption.

In its series of experiments at Nice the commission first applied the process of Mr. Brullé to six classes of samples, viz, first, to pure olive oil, then to the same oil with an added admixture of 5, 10, 20, and 50 per cent., respectively, of cotton-seed oil, and, finally, to the pure cotton-seed oil itself. When the result had been established by repeated experiments with each grade of samples, a fac simile of the tint produced by each successive degree of adulteration was prepared by dissolving certain aquarelle pigments in stated quantities of water. Thus the process and a standard system of proofs was put within reach of any person having a good eye for color and a slight familiarity with chemical manipulations.

THE NEW PROCESS.

The process of Mr. Brullé is as follows: Put into a test-tube 1½ grains of pure albumen (this should be gently heated in the flame of an alcohol lamp to expel any remaining moisture in the albumen which might otherwise modify the exactness of the result), then add 3 cubic centimeters of nitric acid and 10 cubic centimeters of the oil to be tested (the quantity of each ingredient used is, of course, immaterial, provided the above-relative proportions are maintained; a test-tube graduated metrically is the most convenient for the purpose), the mouth of the tube is then closed with a cork to prevent the boiling over of the liquid during ebullition, but pierced with a small orifice to permit the escape of vapor which would otherwise explode the tube. The materials are mixed by shaking, but the nitric acid quickly settles to the bottom. Now warm gently in the lamp the part of the tube containing the oil, then apply the flame to the underlying stratum of acid. A fierce ebullition soon ensues, and when this is at its height plunge the tube into ice water sufficiently cold to chill the contents to 4° centigrade, or its equivalent 40° Fahrenheit. During the cooling process there is developed an oleaginous precipitate, ranging in color from pale yellow to reddish-brown, according to the proportion of cotton oil contained in the tested sample. The experiment requires only the simple apparatus above mentioned, and occupies only four or five minutes.

The findings of the commission at Nice are tabulated in its official report, as follows: The standard tint in each grade being produced by dissolving the stated number of units of each pigment named in 100 units of water. For this purpose ordinary dry cake water-colors are most convenient.

1. Pure olive oil yields a precipitate tinged like 5 units of Naples yellow dissolved in 100 units of water.

2. Olive oil containing 5 per cent. of cotton oil yields the tint of 5 units Naples yellow and 5 units of dark chrome yellow in 100 units of water.

3. Olive oil containing 10 per cent. cotton-seed yields a tint equal to 20 units Naples yellow, 6½ units chrome yellow, and 1 unit Chinese vermilion, in 100 units of water.

4. Olive oil containing 20 per cent. cotton-seed yields a tint equal to 6½ units Naples yellow, 6 units chrome yellow, and 1½ units Chinese vermilion, similarly dissolved.

5. Olive oil with 50 per cent. cotton oil yields a tint equal to 5 units Naples yellow, 5 units chrome yellow, and 5 units of vermilion.

6. Pure cotton oil yields a precipitate having the color of 3½ units chrome yellow, 10 units of vermilion, 1 unit of burnt sienna, and 1 of natural sepia, in 100 units of water.

Other seed oils, including sesame, cameline, peanut, and poppy seed, give a precisely similar series of tints in proportion to the degree of their admixture with olive oil, except that the colors are more inclined to the reddish shade, which would be produced by covering the corresponding cotton-seed tint with a thin wash of carmine.

These gradations of color are most marked when the liquid in the tube is at about the stated temperature, 40° F. As the precipitate is further chilled to the freezing point, the colors fade and lose their individuality.

Such is the system which it is now expected will enable purchasers and consumers of olive oil in this country to detect the adulterations, which have become so general that very few brands or firm names are any longer a guaranty of purity. When it is remembered that more than 2,000,000 gallons of cotton-seed oil are exported from the United States to Marseilles in a single year, and that more than half of this vast quantity is used for adulterating olive oils, a large part of which are re-imported to the United States through a 30 per cent. duty, the importance of some new and better means of controlling the integrity of this trade will be apparent.

Two weeks ago 1,000 tierces of American lard were stopped at the wharf in Marseilles and the consignees subjected to a costly process, which is not yet terminated, because the lard was found upon analysis by the customs officers to contain 10 per cent. of cotton-seed oil.

This seizure was based upon the fact that, while lard is entitled to entry duty free, cotton-seed oil bears a duty of 6 francs per 100 kilograms, and this adulteration of a free article with a dutiable one is held to be fraudulent. The least that can happen to the shippers in this case will be that they must pay the duty on 100 tierces of cotton-seed oil and the expenses of the process, besides the loss which the consignee suffers from the delay. Might not this rigid scrutiny be equally well applied to some of the adulterated and falsified foreign products which are landed at American ports?

It is not within the scope of this report to consider whether either lard or olive oil, when adulterated with cotton-seed, is necessarily unwholesome. The vital fact is that in paying from 40 to 50 cents per kilogram and 30 per cent. duty on American cotton-seed as olive oil, the people of the United States are submitting to a wholesale fraud, the proportions of which are increasing year by year.

The interests of both the United States and France will be subserved when this reckless tampering with the integrity of commerce is systematically suppressed. As long as our people will accept and pay for adulterated oils they will continue to flood and dominate the market. The remedy must be applied at our ports of entry.—MARSEILLES, *July 31, 1888.*

FRANK H. MASON,
Consul.

MANUFACTURE OF WINE FROM CURRANTS.

Favorable weather during the winter and spring has proved very beneficial to the currant vines. The fruit is now well developed and appears very abundant, and unless something untoward occurs, such as rot or damage from rain between this and the housing of the fruit, the yield will be the largest ever produced.

Last season's crop has proved to have been over 127,000 tons, or just about the same as the crop of 1886. During the spring, and even after a good portion of the crop had been shipped off, it was supposed that there would have been a falling off of 10,000 to 15,000 tons, in consequence of the old vines having produced poorly, but this, it has been proved, was more than made up by young vines coming into bearing. As all the vines, however, this year have a large show, and the usual proportion of new plantations will come into bearing, I do not think I shall be far wrong in predicting that this season's crop will reach 150,000 tons, barring, as before said, unforeseen circumstances.

The gathering of the fruit in early situations will commence about the 25th of next month, but it will be the end of August, even if the weather be favorable, before the whole crop can be secured.

CURRANTS FOR WINE.

Had it not been for the new outlet which presented itself some years ago for the consumption of currants in France for wine-making purposes, crops similar to the one which we are likely to have this year could never have been consumed at prices in any way remunerative to currant growers. The introduction of currants into France for wine-making dates from the year 1887, when, owing to a large crop and very indifferent quality, the article had depreciated so much in value in the usual markets of consumption that it could be bought at a price which barely covered the cost of transport and duty. It then attracted the attention of French distillers, and was found upon trial to produce an excellent aromatic alcohol superior in quality to any other spirit,

excepting that distilled from wine. Prices, however, in succeeding seasons again attained their normal level, and distillers were no longer able to use currants at a profit, but meanwhile wine-makers had been experimenting with the article, and it was found that it produced likewise, by simple admixture with water and subsequent fermentation, a liquid which had all the attributes of wine, and which, owing to the destruction caused to the French wine-growing districts by the *phylloxera*, would act as an admirable substitute for the cheap wines required for consumption by the laboring classes, now no longer to be obtained by them on account of the scarcity and dearness of all French wines. Since 1878 and 1879, therefore, this new industry has made rapid strides in all parts of France; the importation has gradually increased to 40,000 or 50,000 tons of currants, besides some 60,000 tons of Turkish and Spanish raisins, which are annually imported for a similar purpose, and much capital has been invested in building large manufactories and acquiring the necessary material for the production of this wine, so that nothing but prohibitive import duties is likely to interfere with the gradual increase of trade in the article between the two countries. What advantage has accrued to Greece from this newly-established trade can be judged from the fact that, ever since the exportation of currants to France has assumed important dimensions, the price of currants has gradually increased by about 50 per cent., or, say, from an average price of about francs 30 cif. per 100 kilograms, at which currants were exported in the years 1879–'81, to francs 45 cif., which has been the average of the last two or three years, and still, as before stated, the importation continues to increase annually.

The process of wine making from dried currants is exceedingly simple. The fruit is emptied out of the barrels or sacks in which it arrives into large wooden tubs, of a capacity of several tons, and twice or thrice (according to the quality and strength of wine which it is intended to produce) the amount of water is added. During cold weather it is necessary to artificially heat the water to an average summer temperature, otherwise the fermentation would be too long delayed, but under ordinary circumstances the fermentation has taken place and the liquid is ready to be strained in a period of from eight to ten days. When this last operation has taken place the liquid is ready for immediate use, and can in no way be distinguished from ordinary light white wines; it is of a light ruby color and possesses a strength, according to the amount of water that has been added, of from 9 to 13 degrees. Wholesale dealers usually sell it at so much per degree of alcoholic strength. It is also employed for the manufacture of superior brands of wine, and this is done by the admixture of strong and colored Spanish, Italian, and Dalmatian wines, and by various other processes well known in France. This should not, however, cause any prejudice against similar wines, for they contain nothing deleterious or in any way injurious to the consumer, for the currant in its original state is simply a small stoneless grape, which produces an excellent, strong, fruity-flavored wine; the French, therefore, in adding water to the dried fruit are merely replacing what has been drawn out of it

by the action of the sun in the process of drying. Considering how much spurious wine is put on the market nowadays, I think one has reason to congratulate himself if he can be perfectly certain he is drinking nothing worse than the liquid produced by the admixture of currants with water. Currants are likewise consumed to a great extent during the vintage by farmers and proprietors of vineyards in France, who produce ordinary qualities of wine and who, owing to the remunerative prices paid for their wines, are anxious to increase their product as much as possible. Experience has shown them that if currants, with the usual proportion of water, are mixed during the vintage with the fresh grapes and allowed to ferment together, the blending is much superior to that obtained by mixing a currant wine to a natural wine, and the liquid obtained has all and every attribute of pure, natural wine. The most careful chemical analyses have declared this, and it is, therefore, not to be wondered at if many wine-growers in France avail themselves of this to make up, in a small way, for the enormous deficit caused by the ravages of the *phylloxera*, which, if I am not mistaken, has reduced the total French wine production from an average of about 60,000,000 hectoliters of wine to about 30,000,000 annually. I may add that the 40,000 to 50,000 tons of currants annually imported into France, when turned into wine, represent only 1,500,000 hectoliters, so there is plenty of room for the further development of this trade.

To a smaller extent currants are employed in France, Germany, and Switzerland by the poorer classes, who make an alcoholic beverage for themselves by mixing them in a jar with water and allowing them to ferment. — PATRAS, *June 30, 1888.*

E. HANCOCK,
Consul.

TOBACCO IMPORTS INTO EGYPT.

Referring to my No. 226, of June 12th, I have to report that the Egyptian Government now decrees that imported tobacco must be accompanied with duly authenticated declaration that it has been produced in the country from which it is exported into Egypt. In default of such declaration a tax of about 10 cents per pound will be imposed. The object of this tax is to protect Turkish tobacco, which the Greeks have been compounding with the products of their own and other countries and sending such compounds into Egypt. The same thing is reported from Malta. Greeks, and probably Maltese, will, I am satisfied, present all the false certificates required, and it remains to be seen how the Egyptian Government will make this decree virtually good. I have just received a letter from a Greek merchant in Anvers, who, having been informed that an effort is being made to introduce American tobaccos into Egypt, suggests that they be not imported direct, but that shipments be made to him at Anvers, where the American product could be subjected to profitable treatment. This proposition looks to fraud against Egypt, to violation of her laws, and, I feel assured, to the swindling of

American consignors. Greek treachery is an inherent quality which has grown in greater ratio in the ascending scale than has national power and influence descended. If Americans send tobaccos to Egypt they will pursue the safest course in making direct shipments and in letting intermediaries strictly alone.

In my report, sent with No. 226, I calculated that the Egyptian demand for foreign tobaccos to satisfy the lack of home production would begin in September. On this point I have changed my views. Further investigation satisfies me that this demand will not begin before the end of the present calendar year.—CAIRO, EGYPT, *July 12, 1888.*

JOHN CARDWELL,
U. S. Agent and Consul-General.

SWISS EXPORTS TO THE UNITED STATES.

The following table shows the value of declared exports from the consular district of Horgen to the United States during the fiscal year ending June 30, 1888:

Articles.	Third quarter, 1887.	Fourth quarter, 1887.	First quarter, 1888.	Second quarter, 1888.	Total.
Articles of art (wood carvings, musical boxes, pictures, etc.)	$509.30	$115.80	.....	.....	$625.10
Bolting-cloth	7,732.54	10,897.92	$6,409.55	$11,468.26	36,508.27
Books	96.50	.....	.....	.....	96.50
Catholic devotional articles	37,600.64	29,616.16	34,051.29	21,868.81	123,136.90
Cheese	2,881.46	1,687.82	870.25	1,002.66	6,442.19
Clocks	692.87	28.95	.....	.....	721.82
Cotton in pieces	.....	560.78	179.71	.....	740.49
Cotton thread	.....	.....	.....	123.41	123.41
Drugs	.....	.....	.....	353.69	353.69
Electros	.....	181.55	.....	.....	181.55
Honey	.....	143.76	.....	155.94	299.70
Iron goods	38.60	229.59	115.41	.....	383.60
Machinery for weaving, knitting, etc	.....	2,652.28	459.98	1,666.46	4,778.72
Mineral water	.....	157.48	.....	.....	157.48
Porcelain and stoneware	39.37	.....	.....	.....	39.37
Raw silk	.....	987.09	.....	.....	987.09
Silks in pieces	228,877.02	202,847.66	265,262.67	89,998.12	786,985.47
Silk and cotton goods in pieces	182,937.68	142,473.00	262,215.45	245,183.77	832,809.90
Silver-plate (old), U. S. manufacture	600.00	.....	.....	.....	600.00
Straw goods	252.88	8,062.13	10,175.41	967.16	19,457.58
Sugar of milk	582.86	555.45	2,068.20	785.10	3,991.61
Velvets	6,600.86	5,476.73	1,002.98	6,829.43	19,910.00
Weaving utensils	520.40	616.54	.....	182.21	1,319.15
Wines and liquors	742.53	372.45	723.48	484.56	2,323.02
Total for year ending June 30, 1888	470,705.51	407,663.14	583,534.38	381,069.58	1,842,972.61
Total for year ending June 30, 1887	.....	.....	.....	.....	1,765,069.64
Total for year ending June 30, 1886	.....	.....	.....	.....	2,066,336.78

HORGEN, *July 1, 1888.*

WILLIAM T. RICE,
Consul.

RATES OF EXCHANGE IN BRAZIL.

A branch of the London and Brazilian Bank, Limited, in this city, is the only house which gives regular public rates of foreign exchange. For specie there is generally a limited demand, but the foreign coin which commands the slightly higher price is the British sovereign, because it is better known among the people. As a matter of fact, practically speaking, there is no gold in circulation, and but little silver, paper and copper being the currency of the country.

All quotations are made for gold in London, and paper being at a discount of 12 per cent. as compared with Brazilian gold, the quotations are understood to mean the number of pence in gold given in London for millreis in paper received here. A millreis gold is worth 27 pence, or 54 cents United States gold, but as there is no gold in circulation all bills are purchased with paper. When the quotation in London is 23½ pence to a millreis, by parity of rates it is 405 reis to the franc (19.3 cents) on Paris, 504 reis to the mark (23.8 cents) on Hamburg, 230 per cent. on Lisbon, and 2,200 reis to the dollar (96.5 cents) on Montevideo.

To explain the rate of 230 per cent. on Portugal, the millreis (monetary unit of Brazil), like the Portuguese millreis, contains, as the word indicates in the language, 1,000 reis, but of the gold value of 54 cents, while the Portuguese millreis has twice the purchasing power and weight and is worth $1.08 gold; therefore, when a bill is desired here upon Portugal it takes twice the number of Brazilian millreis to purchase a given number of millreis in Portugal, and as Brazilian paper is always at a discount, the difference in value between it and gold is added to the rate. When there is an increase or decrease on London the rate increases or decreases for all other points in the same ratio.

The following is the highest and lowest rate of exchange on London, in pence, for the first six months of 1888:

	Highest.	Lowest.
January	23⅞	23½
February	25	24¼
March	24⅞	22½
April	24⅜	23
May	25 7/16	23½
June	24⅞	24

The estimated amount of foreign bills passed in Rio Grande do Sul in the first six months of 1888 is as follows: January, $1,040,600; February, $774,400; March, $798,600; April, $629,200; May, $193,600; June, $677,600.—RIO GRANDE DO SUL, *July 18, 1888.*

LEBBEUS G. BENNINGTON,
Consul.

ADULTERATED LARD IN ENGLAND.

It was a necessary consequence of the late proceedings in Congress and before the Committee on Agriculture with reference to the manufacture of lard and of "refined" lard that attention would be drawn in this country to the question, and it was a reasonable expectation that proceedings would be taken by the authorities under the "Food and Drugs Act" against venders of the adulterated article, for thus is it plainly designated in England, and the euphonism "refined"—whose meaning is as well understood by the trade here as in the States—is not employed.

The Department is already, in all probability, informed of the action taken by the health committee of the Town Council of Liverpool on the 20th of June last, when several wholesale importers of American lard were fined for selling "lard not of the nature, substance, and quality demanded by the purchaser." The prosecution was based upon an analysis of American lard made by the public analyst, who found therein cotton-seed oil and stearine—either beef or mutton fat. The analyst was stated to have discovered, after eighteen months' investigation, a method of detecting these foreign matters in the lard. It is, however, reasonable to assume that he gathered from the evidence before the House Committee on Agriculture the knowledge that nitrate of silver unerringly indicated the presence of cotton-seed oil. The accuracy of his analysis was questioned by no one of the defendants, one of whom asked and obtained leave to appeal. This appeal case has not yet, I believe, been heard.

It was almost certain that the action of the Liverpool authorities would be followed by suits and summonses in other places, and I have now to report that on the 24th of July eight retail dealers were summoned in Bristol for "selling a pound of something which was not the article demanded, namely, lard." The police proved the purchase of the lard at the respective stores of the eight defendants, and that they had in each case complied with the requirements of the act by informing the grocer of the object they had in view in purchasing, and by leaving with him a portion of the quantity bought. The public analyst testified to the presence in each sample analyzed of considerable quantities of cotton-seed oil and foreign fat, one sample containing 50 per cent. of the latter. Three American houses were involved. The magistrates in giving their decision said that it was the first time the matter had been brought before the court, and they thought the objects in view would be gained by the publicity given to the proceedings. Hence they would not convict, and would consent to the information being withdrawn on the defendants paying costs.

The facts in relation to these Liverpool and Bristol cases were widely disseminated by the press, and not a few solid editorials congratulated the people that at last the chemists of this country were able to "cope with the

smartness or roguery of our American cousins." What the immediate effect upon the trade has been, it is too soon to say. The agents of the "refined" or compound lard wrote one customer (and the presumption is that all received similar communications) after the Liverpool trial offering an allowance upon unsold stocks, requesting him "to do the best he could with what remained in hand," and inclosing labels to be affixed, of which labels one is forwarded herewith:

Whether the employment of the words "This product is a mixture" would constitute a good defense is, I believe, an open question.

The ultimate effect of these trials and the publicity given their results upon our trade in this country in lard, I may with a certain amount of confidence predict, will be as follows:

The 50,000 or so tierces of "compound" lard annually imported into this country (England and Scotland) will cease to come here, and there will be a corresponding, or nearly a corresponding, increase in the import of natural lard. It is important to note that while last year 600,000 tierces of compounds were exported from the United States as against 400,000 tierces of packers' lard, yet that England and Scotland took 200,000 tierces of the latter and only 50,000 of the former. In other words, Great Britain takes 25 per cent. of the lard export of the United States, but instead of three-fifths of the British import consisting of compound lard and two-fifths natural, only one-fifth is compound, while the other four-fifths is pure. A controlling reason for this is to be found in the operation of the Food and Drugs Act, which has discriminated and will discriminate between the pure and the adulterated, and which has not and will not condemn all American lard on account of its origin, but only such portion as it finds, upon investigation, to deserve condemnation. It is possible that there may, for a limited time, be a narrowed demand for American lard, but in the end our export of pure lard will be materially increased so far as Great Britain is concerned.—BRISTOL, *August 1, 1888.*

LORIN A. LATHROP,
Consul.

A SCANTY WHEAT CROP IN FRANCE.

The phenomenally cold, wet weather which has prevailed generally throughout Great Britain and the whole of western Europe since May has so affected the quantity and quality of the wheat crop in France as to cause during the past week an extraordinary rise in breadstuffs in the markets of this country. In Marseilles, for example, American red winter wheat rose from 19.50 to 21.50 francs per cental during three days, and flour is now held at a higher price than has been touched here for many months past. In the Mediterranean region the wheat is of fair quality, and has been generally harvested in good condition, but north of the latitude of Avignon the cold, cloudy weather and persistent rains have not only retarded the ripening of the crop, but have so complicated the harvesting that much of what has been gathered has suffered more or less injury. During the past two days the return of fine weather has checked momentarily the somewhat panicky feeling of the previous week, but the season is now so far advanced that the long-delayed sunshine can not do more than slightly improve the *quality* of the crop by facilitating the work of harvesting.

The essential fact in the situation is that the *quantity* of the French wheat crop of this year can not exceed 90,000,000 hectoliters, which will leave a deficit of 28,000,000 hectoliters, or about 79,520,000 bushels, to be supplied by importation.

It is not improbable that the total importations may exceed even that high figure, for the reason that the home crop of last year was a short one, and as the high duty on foreign wheat checked importations the stocks on hand throughout the country are quite below their normal proportions.

The law of March 25, 1887, advancing the import duty on wheat from 3 to 5 francs per cental, contains a provision that in case of any extraordinary crisis the President of the Republic may, by proclamation, reduce or abate entirely during a stated period the duties thereby imposed. In the face of the large importations which will necessarily be made during the coming year a rumor is already current that the cabinet would advise that this step be taken. It is not apparent that this report has any tangible foundation, and it is extremely improbable that the French Government, in the presence of the distressed condition of agriculture, will abolish a duty which, besides yielding a large revenue, will add 25 per cent. to the market value of native wheat. But whether this be done or not the wheat importation of the coming year will be necessarily heavy, and the United States will have an opportunity to furnish a full share of it. Austrian harvests have suffered like the rest from untoward weather. Russia has a large and excellent crop, but merchants in Black Sea ports fully appreciate their advantages, and are, for the present at least, stubbornly holding the new crop for higher prices than are as yet offered.—MARSEILLES, *August 9, 1888.*

FRANK H. MASON,
Consul.

RAILROADS AND STEAM-SHIPS OF SOUTHERN BRAZIL.

In this province, Sao Pedro do Rio Grande do Sul, there are at present three railways in operation, and one or two other lines projected, for which preliminary surveys have been made.

The lines in operation are, first, Estrada de Ferro do Rio Grande a Bagé, opened for traffic on December 2, 1884; second, Estrada de Ferro de Porto Alegre a Uruguayana, opened in March, 1883, and third, Estrada de Ferro de Porto Alegre a Nova Hamburgo, opened in 1875.

The first line runs from the city of Rio Grande do Sul, in the southern part of the province, along the low, sandy shores of Lagoa dos Patos to Pelotas, a city of over 10,000 inhabitants, distant 52.5 kilometers; from thence almost due west to Bagé, the present terminus, a total distance from Rio Grande do Sul of 280.2 kilometers, or 174 English miles, and within 80 miles of the boundary line between the Republic of Uruguay and the Empire of Brazil.

This road is substantially built; has a gauge of 1 meter, or 1.09 yards, and is laid with heavy T rails, of English manufacture, on hard-wood sleepers, secured with spikes, and ends joined with fish-plates and bolts. It was built, and is at present owned and operated, by an English company. The locomotives are from the famous Baldwin Locomotive Works in the United States, of the "Mogul" pattern, burning Cardiff coal and patent fuel, which is simply very fine coal mixed with some resinous substance and pressed into hard blocks. Passenger coaches are of two classes — those for the first-class passengers were made in the United States and on the American plan, and those for second-class passengers were made in Europe, but on the same plan as the first-class coaches. The traffic, or freight cars, are of Brazilian make, being light and short, mounted on a single truck at each end. It is expected to extend this road to the Brazilian boundary line.

The latest published official returns showing the receipts and expenses of the road are, for the year 1886, in which year its receipts were, reduced to United States currency, $329,645, and expenses, including improvements, $306,364, leaving an unexpended balance of $23,281. In that year it carried 105,465 passengers of all classes, and 20,735 tons of freight. First-class passenger rates from Rio Grande to Bagé are $10; round-trip, $15. Freight is divided into five classes under the tariff list of the company. For first-class freight the charge is $28 per ton from Rio Grande to Bagé, and for fifth class $6.70 per ton. The road was built at an average cost of $37,000 per mile, under a guaranty by the Brazilian Government of 7 per cent. per annum on the capital stock subscribed; provided, however, so much is expended annually in extending the line or on proper improvements of the line already built by the company, which improvements are under the control and direction of the Government's agents, termed fiscal engineers.

If the operating expenses should exceed the receipts, the 7 per cent. guaranty by the Government is first applied to the payment of that deficit, and if not sufficient to discharge it the Government's responsibility extends no farther. A number of subscribers to the capital stock were under the impression that the guaranty of 7 per cent. per annum by the Brazilian Government was unconditional, but they have since learned different, for last year a dividend of 5 per cent. only was declared, which is practically a deficit of 2 per cent. on the gross receipts of the road.

The second road, when completed, will run from Porto Alegro, the capital of the province, in the central eastern part to Uruguayana, on the Uruguay River, a distance of 378 miles. However, it is not completed over two-thirds of the way, the work of track-laying progressing slowly. This is the central road of the province, dividing it east and west into two nearly equal parts, and when completed will connect the capital, a city of 40,000 inhabitants, with the Argentine Confederation at Uruguayana, where the Brazilian Government has a custom-house. It is owned and operated by the Government and is 1 meter in gauge. I know nothing of the engines and cars.

The receipts for the fiscal year 1886 of this road were $219,063; expenses, $254,310, leaving a deficit of $35,247; number of passengers, 40,515; freight, 34,701 tons.

The third and last line in operation is a short one, 26 miles in length, connecting the capital with New Hamburg, a large German settlement. It is owned by an English company, and in 1886 had a deficit of $1,878, but I am informed that under its recent management it will pay a small dividend this year.

Some time since a survey was made by the Government for a road from Porto Alegro to the port of San Francisco, in the province of Santa Catharina, the object of which was to give an outlet to the sea for the northern and western part of the province without passing through Lago dos Patos over the Rio Grande bar. This survey has been retracted by the Government, as the road it now operates does not pay expenses.

The sum of $100,000 has been subscribed by citizens of this city and Pelotas for the building of a steam tramway running from the suburbs of this city to the sea-shore, a distance of 11 miles, where extensive grounds will be arranged for a pleasure resort. This road will be built, the name of the company being Companhia de Binds Suburbanos de Mangueira.

STEAM-SHIP LINES.

The steamers of six different companies call at Rio Grande do Sul. The Companhia Nacional de Navegucao a Vapor has six steamers, is subsidized by the Brazilian Government for mail service, and runs its steamers regularly from Rio de Janeiro to Porto Alegre; the Liverpool, Brazil, and River Prata steamers (Lampert and Holt's line), three in number, carry cargoes only, and ply between Rio de Janeiro and Rio Grande generally, though

they go to Porto Alegre, where they receive freight for that point. This company will soon put on another steamer; the Companhia Navegucao Estrada de Ferro; Espirito Santo e Carevellas, has two steamers running as the other lines mentioned; the Companhia Paulista one steamer; the Companhia Norte é Sul two steamers, and the Companhia Navegucao Costeira has one steamer, which carries cargoes only. The time employed by these steamers to reach Rio de Janeiro is from four to five days, a distance of 720 miles, including calls on the way.

The steamers of the last two named companies sometimes go as high as Pernambuco, consequently their arrivals and departures are irregular. The largest of these steamers has a registered tonnage of 600, but can take almost, if not quite, 1,000 tons; the smallest, 320 tons register.

These steamers were all built especially for this trade, of light draught, in order to cross safely and at all times the Rio Grande bar. Postal communication mails for the interior are regularly dispatched to Bagé daily by train, and all steamers, except those belonging to the Government, coming to or leaving this port, carry mail. — RIO GRANDE DO SUL, *July 9, 1888.*

LEBBEUS G. BENNINGTON,
Consul.

LANDS FOR IMMIGRANTS INTO GUATEMALA.

The laws of Guatemala amply favor the industries of agriculture and stock raising. Liberal laws have been enacted ordering reduction in private ownerships,* and for the selling at sufficiently low prices of the public lands and those of the municipalities.

In Vera Paz, for example, the caballerias (112 acres each) of public lands for such an object can be purchased at such low prices that they never exceed $50 per caballeria.† The liberality shown in the above-mentioned concessions has opened up agriculture notably. The rich coffee districts of Costa Cuea, El Palmar, Xolhuitz, etc., were formerly virgin mountains,‡ which produced nothing.

The Government would welcome North America immigrants with pleasure coming to settle in this country to engage in stock raising. The department of Huehuetenango and El Quiché, in the west of the Republic, have extensive lands of their own for this industry.

The immigrants making use of the pre-existing laws and following the easy form of procedure can acquire the public lands which still exist there, of which portions remain, though not in large quantities. — GUATEMALA, *July 12, 1888.*

JAMES R. HOSMER,
Consul-General.

* Without the Spanish text it is difficult to conjecture what this means. It may mean "reduction of the amount of land capable of being pre-empted or acquired by any one individual settler." — A. A. A.

† This is in Guatemalan currency, which would be at the rate of $34.96 in United States gold, or about 31 cents per acre.

‡ Montes = rolling lands.

THE CHAMPERICO AND NORTHERN TRANSPORTATION COMPANY OF GUATEMALA.

A concession was granted, on the 12th of March, 1881, by the Government of Guatemala to Messrs. J. H. Lyman, D. P. Fenner, and T. B. Bunting, citizens of the United States, to build a railroad between the port of Champerico, on the Pacific coast of the Republic, to Retalhulen, a point about 28 miles in the interior.

The concession was for the term of ninety-nine years from the date of the opening of the road to public traffic. For a term of twenty-five years from the same date the road was to be free from taxation and maritime duties, and foreign employés to be exempt from taxation and military service. During the same term, also, the road was to be protected by the Government from any railroad competition within a distance of 15 Spanish leagues on either side of the line. The right of way was also conceded and station grounds given by the Government, together with free use of its telegraph during the construction of the road and free use of the mails for twenty-five years for the business purposes of the road. A subsidy of $700,000, in Guatemalan currency, was given to the enterprise, to be issued in non-interest-bearing bonds, receivable at the custom-house of the Republic in payment of a certain percentage of all duties. A maximum tariff of freight and passenger rates was fixed by the concession, and the road was obliged to carry the mails free, and Government employés on duty at half the regular rates.

The company was incorporated under the laws of California in 1882, and work of construction was commenced in June of that year. The road was formally opened for traffic on the 4th day of July, 1884. Its total cost was about $750,000 in gold. The capital stock of the company is $1,000,000, divided into 10,000 shares of $100 each.

The company mortgaged the road, issuing 500 first-mortgage gold bonds, or a total of $500,000, bearing interest at the rate of 6 per cent. per annum. Twenty-seven of these bonds have been redeemed, leaving a mortgage debt now outstanding of $473,000.

An additional subsidy of 1,000 caballerias* of public land was also granted to the enterprise. This land was selected by the company on the Atlantic coast in one body, and lies along the Sarstoon River, which forms the boundary between Guatemala and British Honduras, otherwise called Belize. It lies within a few miles of the port of Livingston, the chief port of entry of Guatemala on the Atlantic coast. The land is suitable for the culture of bananas, and contains some fine mahogany timber.

CHARACTER OF COUNTRY AND PRODUCTS.

The road was built for the purpose of carrying to the seaboard the great coffee crop of the northern part of the Republic, as well as the imports for the same section received at the port of Champerico.

*A caballeria of land is about 112 acres: the total amount, therefore, being 112,000 acres.

At this port there is an excellent iron pier 1,100 feet in length, the property of a native company. The ships lie outside of this, about a mile from the shore, and cargo is transported to and from the vessels and pier by means of lighters. This work is done by another native company, called the "Agency Company," both enterprises receiving a liberal remuneration from the shippers of merchandise. Along the shore, at points within a few miles of Champerico, a large amount of salt is manufactured by evaporation of the sea-water.

Leaving Champerico the first station on the road is reached about 4 miles inland, called Granada. At this point a mule trail intersects the railroad and salt is shipped to the interior. One mile farther inland is the station of Acapan, where another trail intersects the road, and at which place salt is also received. But the first station of any importance is Caballo Blanco, situated 15½ miles from Champerico. At this point is received about one-half of all the coffee exported from this end of the Republic. From the sea to the place just named the road runs through a low flat country, intersected by numerous streams and covered with a dense jungle, rendering the region around very unhealthy and causing the usual tropical malarial fevers to prevail. Onward from Caballo Blanco a more open country is found, and some timber of large growth. From this point to Retalhulen, a distance of 11¾ miles, the country rises more rapidly and is interspersed with "portreros" or pasture grounds and timber, and from this portion of the road may be seen the foot-hills, where the coffee is grown, and, towering in magnificent grandeur above the pigmy hill peaks, the lofty cones of the Cordilleras.

Retalhulen contains about 5,000 inhabitants, three-quarters of which are probably Indians, more or less diluted with Spanish blood. At this point, which is the terminus of the railroad, the balance of the coffee crop, designed for shipment through the port of Champerico, is received.

The elevation of Caballo Blanco is 275 feet and that of Retalhulen 775 feet above the sea. Advancing to the interior from Retalhulen the country rises rapidly towards the great natural ridge which seems to form the dividing portion of Central America. At an elevation of 1,500 to 2,000 feet the first coffee trees are found. From this altitude to that of 4,000 to 5,000 feet coffee is grown, the best elevation, however, being about 3,500 feet above the sea.

Extending along these foot-hills, so called, parallel to the sea-coast, are the various coffee districts. These are known as Pamaxan, Costa Grande, Costa Cuca, Chuba, San Felipe, Ona, Cuche, Porvenir, Rodeo, San Marcos, Tumbador, etc. The country abounds in beautiful landscape scenery, embracing a wide sweep of visual range over valley and undulating hill sides to the level of the broad sea, with a great variety of wooded and open country thickly studded with luxuriant tropical growth and bright with the varied hues of their foliage. The climate is warm, but not oppressively hot, as it is on the coast. Above the 15,000 feet altitude coast fevers are not found, and no more delightful climate than that which prevails at an elevation of

3,000 feet could be reasonably desired. The country is in a high state of cultivation, with good, substantial, and, in some cases, quite elegant houses, while the equipment of machinery, in connection with the respective cafetals, is perfect for the purpose for which it is employed. Water-power abounds and is freely utilized by the planters.

The most important and valuable estates are owned by foreigners. Among these are to be found Americans, Englishmen, Frenchmen, and Germans. They are very hospitable, live well, and, as a rule, are possessed of considerable wealth.

The coffee is transported to the railroad either in ox-carts or on the backs of mules. It is put up in sacks of 130, 145, and 150 pounds, 130 being the standard and most common weight. On being received by the railroad, either at Caballo Blanco or Retalhulen, it is transported to Champerico and there delivered to the Agency Company for shipment. A large proportion of the coffee is exported to Hamburg. Next to that point London, Liverpool, and Havre rank as the largest ports of destination. After these come New York and San Francisco. Smaller quantities are shipped to Genoa, St. Petersburg, etc. Rubber in small quantities is also exported from Champerico. Hides are largely exported both to Hamburg and New York.

Although the coast lands are probably the finest in the world for the growth of sugar-cane, the natural market for sugar, San Francisco, is closed by the Hawaiian reciprocity treaty, the consequence being that only enough sugar is manufactured to supply the home demand. The imports through the port of Champerico are large and are steadily increasing, but unfortunately for our trade most of them come from Germany. A small quantity of flour is imported from San Francisco, but little else. Central America, it must be conceded, is a natural market for the United States, and especially for the products of our Pacific States, and it may be with propriety suggested that it would be a wise policy on the part of our National Legislature to enter into some character of reciprocal arrangement with the Central American Republics that would, by opening a market for their products, make a market for our own, notably in sugar. In return for their sugar we would send flour, canned goods, wines, etc. Germany has now the bulk of the trade; England and France competitively also, particularly in the matter of machinery.

About 40 miles inland from Retalhulen is the important city of Quezaltenango, situated at an elevation of 8,000 feet above the sea. This is the distributing point for the greater portion of the imports which find their way over the Champerico and Northern Transportation Company's road. The merchandise is carried from Retalhulen, where the custom-house is situated, on the backs of men and mules. The population of Quezaltenango is about 30,000, and it is the second city in point of importance, population, and trade in the Republic of Guatemala. There is located here a small cotton mill, using native cotton, and importing a small quantity from the United States.

At this elevation wheat is grown, but of poor quality, and there are at Quezaltenango a few flouring mills. The Indians of the vicinity raise corn

and grow also an upland rice and potatoes, the former being their chief article of daily subsistence.

A ride from the coast, which may be made in a single day, presents a great and curious diversity of climate and products of the soil. The whole distance from the coast to Quezaltenango, by rail and mountain road, is about 70 miles. In that distance you ascend 8,000 feet. Starting from the salt works at Champerico you pass through the hot and unproductive jungle lands for some 20 miles; you then come into the cattle and pasture country, still hot; then you pass into the section of the pineapple, banana, orange, and cocoa-nut, where the temperature is still very high; from this section you rise into a more temperate zone where you also find the tropical fruits and the sugar-cane. Around Retalhulen fine tropical fruits abound, notably the pineapple, banana, orange, lime, cocoa-nut, etc. As you ascend from this point you pass into the coffee section and lose the cocoa, but still have the pine, orange, and banana. Above this you arrive at a much lower temperature, losing the fruits and coffee, and passing through an undulating, but at points arable and productive country for corn, wheat, and barley, with a steadily increasing temperature. After passing the road summit there is a descent to Quezaltenango, and you find yourself in a country devoid of timber, but fields blossoming with wheat. Should the traveler continue his journey to the city of Guatemala—southeasterly by point of compass—he would ascend to an elevation of 12,000 feet, enveloped during the mornings with clouds, and at night gaze upon the mountain sides gemmed with dewy frost sparkling beneath the magnified starlight, and among pines and oaks.

The average temperature of the coast is about 90° F. The rainfall is heavy, being something like 150 inches during the rainy season, which continues from April to November. The rains are very regular in their visitation, the days being usually quite clear until about 3 o'clock in the afternoon, when the downpour commences with great violence, accompanied by heavy thunder and vivid lightning, continuing until 9 or 10 o'clock at night, when it ceases with the same sudden character with which it commenced. This occurs nearly every day. The temperature varies but slightly either in the day or night, nor is there any material change in the different seasons. Foreigners who live temperately preserve their health fairly well, though in the course of time the climate will produce the inevitable result of its enervating character.

I have had occasion in a previous report to dwell exclusively upon coffee as the staple product of Guatemala. I may be permitted to reiterate, in connection with this sketch of its means for transportation, that the total product is about 500,000 quintals, equivalent to 50,000,000 pounds. Of this total crop about 350,000 quintals are produced in the districts which ship over the Champerico railroad and through the port of that name. Its grade now ranks only below the finest of Mocha and Java. Below it come the coffees of Salvador and Costa Rica, and after these the Brazilian. A very fine quality of cacao is also produced on the coast land near Retalhulen.

LENGTH AND DESCRIPTION OF THE RAILROAD.

Starting from Champerico, in latitude 14° 17′ 44″ north, longitude from Greenwich 91° 55′ 5″ west, the road runs in a northerly direction very nearly straight 15½ miles to Caballo Blanco; thence it deflects to the eastward and runs to Retalhulen, a farther distance of 11¾ miles. The length of the road is 27¼ miles; length of sidings, 1 mile; total length of track, 28¼ miles; maximum grade, 3 per cent.; minimum curvature, 4 degrees; gauge, 3 feet; steel rails, 35 pounds weight per yard; number of ties per mile, 2,640 (of these about five-eighths are of native woods and about three-eighths of California red wood); size of ties, 6 x 7; length, 6 and 6½ feet; bridges of steel with masonry abutments; buildings of wood and iron; number of locomotives, 3, two of them of 28 tons weight and one of 22 tons, all made by the Baldwin Locomotive Works at Philadelphia; number of box-cars, 30, with capacity of 8 tons; number of flat-cars, 10, capacity, 9 tons (the box-cars and 5 flat-cars were built by Carter Brothers, at Newark, Cal., and 5 flat-cars were built in the railroad shop at Retalhulen); passenger cars, 1 first-class, 1 second-class, and 1 third-class, built by Carter Brothers; 6 hand cars; 3 push cars; and 2 velocipede cars. At Retalhulen the railroad has a fine machine shop, blacksmith shop, and saw-mill. The shop is fitted with both iron and wood working machinery. There are three water-tanks, made of iron, on the line of the road.

TRAFFIC STATISTICS—YEAR ENDING JUNE 30, 1887.

Receipts.

From freight	$146,158.97
From passengers	11,562.05
Total	157,726.02
Expenses of operation	64,613.64
Profit of operations	93,112.38
Percentage of cost of operations to gross receipts	41

Tonnage.

Total number of tons hauled	20,995.41
Number of tons hauled one mile	471,551.71

Mileage.

Total number of miles run by trains	17,328

Tariff.

	Per ton.
Average tariff rate based on freight earnings	$6.96
Average tariff rate based on total receipts	7.51
Average rate on coffee exports	6.74
Average rate on miscellaneous exports	10.00
Average rate on all exports	6.78
Average rate on imports	9.22
Average rate on salt (local)	2.50
Average rate on other local freight	4.28
Average rate on all local freight	2.97
Average rate on all freight	6.96

Movement of freight.

	Tons.
Total amount of coffee moved	16,873.69
Total amount of miscellaneous exports moved	186.25
Total amount of exports moved	17,059.94
Total amount of imports moved	3,015.49
Total exports and imports	20,075.43
Total local freight	919.98
Grand total of tons moved	20,995.41

Receipts.

From freight on coffee	$113,672.43
From freight on miscellaneous exports	1,948.28
From freight on miscellaneous imports	27,803.48
From local freight	2,734.78
Total receipts from freight	146,158.97
Passenger receipts	11,352.05
Grand total from traffic	157,511.02
Miscellaneous rents, etc	315.00
Received from interest on the Government subsidy bonds	12,776.85
Total receipts	170,502.87

All weights are in Spanish tons, the Spanish ton containing 2,000 pounds Spanish, or 2,032 pounds English. Money is in Guatemalan currency, the average rate of premium paid in the fiscal year ending on June 30, 1888, being 30 per cent. on American gold.

The expenses of operation were divided as follows:

Superintendence and general expenses		$20,388.63
Maintenance of track, buildings, and structures		16,611.85
Train expense	$6,728.47	
Repairs of locomotives	805.48	
Repairs of cars	1,085.01	
Water supply	912.65	
Fuel	2,481.05	
Supplies	1,149.28	
		13,161.94
Agencies	7,067.57	
Supplies	541.43	
Handling freight	3,998.02	
Expenses of making collections	2,844.20	
		14,451.22
Total		64,613.64

There is a steady and large increase going on in importation, and the production of coffee is also increasing. The Government is also now paying the interest on the public debt promptly. In the above statement there appears interest for a half year only. — GUATEMALA, *July 14, 1888.*

JAMES R. HOSMER,
Consul-General.

LANDED PROPERTY IN DENMARK.

Some tables have lately been issued from the statistical bureau on the division of landed property in Denmark, being arranged according to the value of the land in "hartkorn" admeasurement, upon the tax valuation taken on January 1, 1885. The hartkorn is an old Danish basis for the land tax for taxation of the land according to its estimated quality, and may thus embrace a greater or less area than the general land measurement used in ordinary sales of land, namely, "barrels of land" (a barrel being equal to 56,000 square feet). These tables show that in Denmark there are 224,000 properties held in fee simple, viz:

	Number.	Barr. hartk.
Large estates (holdings of 12 barrels hartkorn and over)	1,954	55,187
Peasant proprietors (holdings from 1 to 12 barrels hartkorn)	71,678	268,967
Cottages with less than 1 barrel hartkorn	150,260	40,733

In addition to these there are 35,329 houses in the rural districts without allotment of land. Denmark's agricultural population during the century has been steadily increasing in numbers, with an increase from 1873 to 1885 of 20,000 new homesteads, answering to an increase of the agricultural population of about 100,000 souls. The larger estates are distributed as follows:

	Number.	Barr. hartk.
Estates of 30 barrels hartkorn and over	531	30,545
Estates from 20 to 30 barrels hartkorn	350	8,626
Estates from 12 to 20 barrels hartkorn	1,073	16,016

The larger landed properties in Denmark can not be said to be either very numerous or considerable as regards hartkorn valuation, the total amount of hartkorn reaching only about one-sixth and one-seventh of the aggregate hartkorn. Of the first group, manorial estates of over 30 barrels hartkorn, more than twice the number are to be found in the islands as compared with those in the Peninsula of Jutland; the second group is seen to be equally divided between these two divisions of the Kingdom; whilst the third, and by far the most numerous group (the real landed gentry's estates), are again more largely represented in the islands. Up to the year 1861 both the manorial and the landed gentry's estate were steadily retrograding, but from that period the large estates have increased both in numbers as in hartkorn; so that there are at the present day about 100 more than in 1873, with an addition of about 2,900 barrels of hartkorn—this increase taking place at the cost of the peasant proprietors. The class of peasant proprietors is distributed in the following manner, viz:

	Number.	Barr. hartk.
From 8 to 12 barrels hartkorn	3,718	34,871
From 4 to 8 barrels hartkorn	24,222	137,411
From 2 to 4 barrels hartkorn	23,131	67,095
From 1 to 2 barrels hartkorn	20,609	29,590

In numbers, as well as in land area, this class forms the great bulk of Denmark's farmsteads, its hartkorn embracing about three-fourths of the collective hartkorn, and its number about 97 per cent. of the collective number of farms. The first group, the large peasant farmers, is nearly twice as numerous in the islands as in Jutland. The medium-sized farms are also more numerous in the islands, whilst, on the other hand, the two last-mentioned groups are found to be twice as numerous in Jutland as they are in the islands. Again, inside of these peasant holdings no inconsiderable extent of shifting has taken place. The larger-sized farms are seen to have decreased both in number as in area, whilst the smaller-sized farms have considerably increased. From 1873 to 1875 the farms from 4 to 12 barrels hartkorn were reduced in number by 1,350, and in hartkorn 8,678 barrels, whilst the smaller farms, from 1 to 4 barrels hartkorn, have increased in number by 2,069, with 3,855 barrels. The peasant husbandry of the Kingdom in this period has thus been increased by 719 holdings, whilst their hartkorn valuation has been reduced by 4,823 barrels; of this hartkorn, 2,910 barrels have been inclosed in the large estates and in the 1,900 barrels gone to the house allotments. The 150,000 cottages with ground fall to the following groups, namely:

	Number.	Barr. hartk.
From 1 bushel to 1 barrel hartkorn	67,773	34,507
From ½ peck to 1 bushel	45,850	5,718
Under ½ peck hartkorn	36,637	508

Cottage husbandry, from 1873 to 1885, has increased in number by 19,098 and in hartkorn with 1,923 barrels. In several ways has the legislature sought to promote the establishment of cottages with allotments, so that whilst the houses in the rural districts one hundred years ago were without land these at the present time possess more hartkorn of land than the manorial estates. Not only an increasing percentage of the agricultural laboring classes has become owners of the soil, but the Kingdom has obtained an increasing number of small but independent husbandmen, a class which will always hold an important mission in aiding the further development of agriculture. Owners of houses of half a peck to one bushel hartkorn will, on the other hand, as a rule, be compelled to seek their chief means of livelihood by labor on the estates, a necessity which naturally will apply still more to the owners of cottages with less than half a peck of hartkorn as also to those entirely without any adjoining land. From 1873 to 1885 these last named have been increased by about 4,000, and now amount to 35,329. In round numbers there are now to be found in Denmark 100,000 houses, the dwellers in which, owners or tenants, must seek their livelihood in agricultural labor. The large and medium-sized houses are pretty equally divided between Jutland and the islands, while those of below half a peck of hartkorn are most numerous in the islands, and those entirely without land in the Jutland division of the Kingdom. A division of the land like the Danish, with the medium-sized and small properties in a large majority, may be regarded as advantageous, for the smaller holdings give a higher gross yield than the

larger. Again, security is afforded to the State by these 71,000 medium-sized properties, supporting a numerous and independent class of yeomen, the real peasant freeholders. From this class is derived the best material for the army; by them the prosperity of the Kingdom is advanced, and, uninfluenced by frequent political and social agitations, they form the ballast which gives to society security and a steady and tranquil development. Furthermore, the 150,000 houses, with their small parcels of adjoining ground, lessen the distance between the peasant proprietor and the day laborer, and a prospect is held out to the industrious of an advancement to independence. Finally, the existence of the 1,900 manorial estates has its advantages, for their owners are usually the pioneers in all agricultural progress and improvements.

By the land laws of 1861 and 1872 certain bounds are placed against the too great subdivision of such properties, providing that for the due maintenance of the buildings and the occupiers there shall at all times be retained a main parcel of at least 20 barrels of land of the value stipulated according to regulated taxation rates. — COPENHAGEN, *July 19, 1888.*

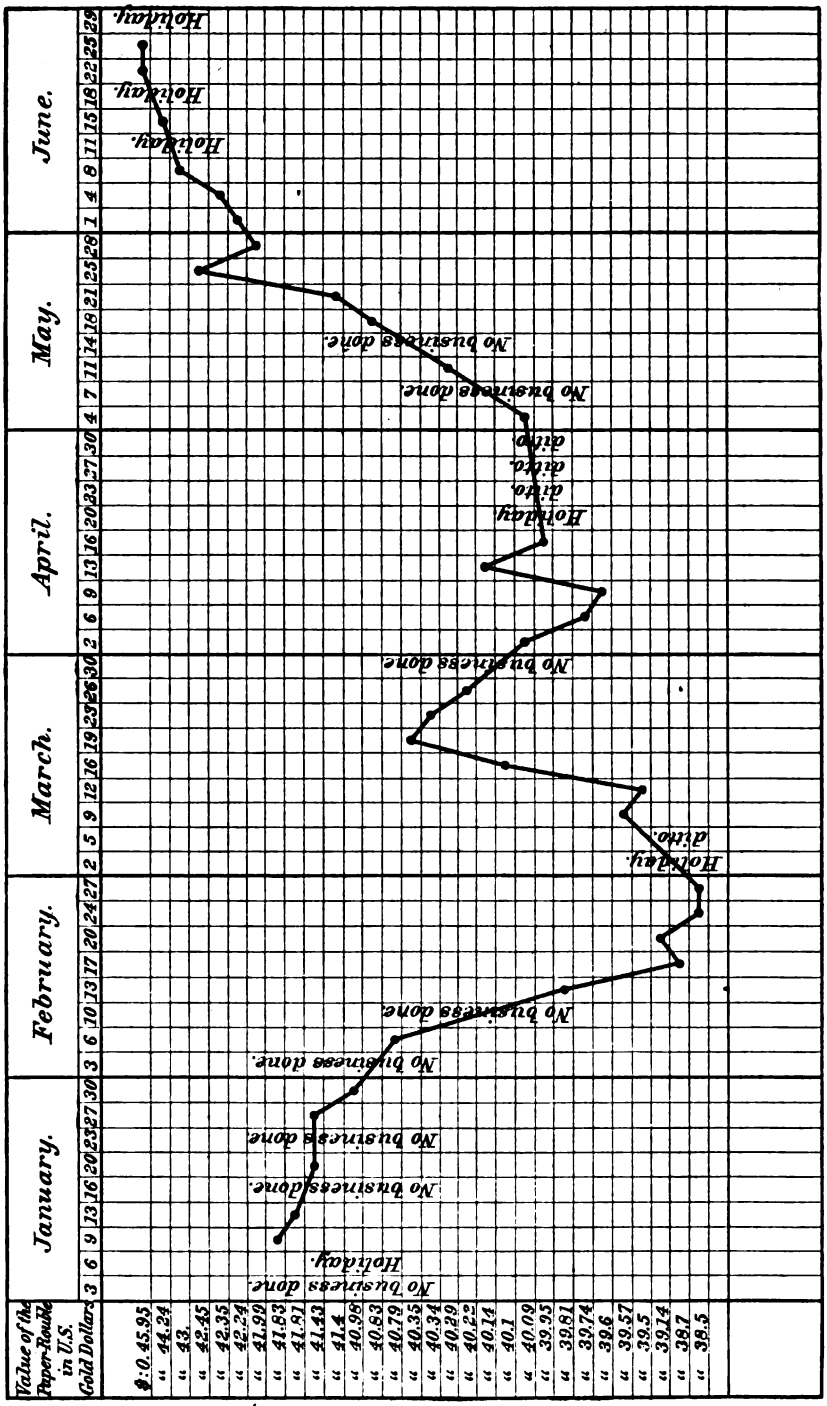
HENRY B. RYDER,
Consul.

CHINESE HIDES.

The Austrian commercial journal, Das Handels Museum, in a recent number devotes a long article to a discussion of the trade in hides from China. These form the principal articles in the trade of China with Austria-Hungary, and are the chief cargoes of the Austrian Lloyds steamers from Hong-Kong. In 1887 68,269 piculs of hides were shipped to foreign countries, against 77,735 in the previous year. It was not until 1876 that the export to England and America attained any importance, but it then increased with great rapidity. The first shipment to the Mediterranean took place in March, 1881, and this was to Trieste. Chinese hides are strong, sun-dried, and have a short hair. In the earlier years the purchase, preparation, packing, and shipping were all done at Shanghai; the work has gradually shifted since 1885 to Hankow. The shipment to Great Britain and North America is in British, that to the Continent of Europe in German hands. China is really not a hide-producing country like India, Australia, and South America, where there are vast pastures for herds and large slaughtering establishments. In China a consignment is collected with care and trouble in small rural villages, frequently in the most remote parts of the western provinces, and always by Chinese merchants. They are, therefore, often weeks and even months before they reach the port of shipment; and this is doubtless the reason why the market has largely shifted from Shanghai to Hankow. The different sources from which a single shipment is derived, and also differences in treatment account for the great difficulty which is experienced in obtaining a like quality. The food which the animal has been accustomed to get has naturally the most important effect on the quality of the hide. When the hides arrive from the interior they are soaked, those which are cut or otherwise injured being taken out for use in the locality. Those for export are cleaned, the heads and hoofs are cut off, and they are treated with a preparation to prevent putrefaction and the ravages of worms or insects. The freight for hides from Hankow to Trieste is 12 taels per ton. Difficulties are constantly arising on account of the tricks of the Chinese dealers, who add substances to increase the weight, and hide defects in all manner of ways. The remainder of the article deals with likin and the like, and has nothing of special interest to China readers.

VALUE OF THE PAPER RUBLE OF RUSSIA.

[Prepared and transmitted by Consul Hornstedt.]



TEA TRADE OF AMOY.

The native tea merchants, who advanced money to the producers, are reported as having suffered serious losses owing to the decline of prices in foreign markets, which made it impossible in many instances for them to realize here on the teas the money they had paid for the same. A native merchant is both slow and reluctant to believe that prices in foreign markets should in any way control the home price of the tea he has to sell. The foreign hongs engaged in this trade are thought to have made only moderate profits, if any at all, on the season's business.

The tea trade of this port has not diminished in quantity during the past year, but the trade of the Empire in that article has suffered a very serious decline during the year. The prospect indicates a further decline in the future so long as existing conditions continue to prevail. Among the reasons for this general decline may be reckoned the increasing competition of Indian, Ceylon, and Japanese teas; the burdensome taxes and export duty, assessed without regard to value, which it has to pay; carelessness in picking and curing, and the *thrifty* but unwise native practice of indulging in too much tea-dust and other adulterations. The commissioner of customs at this port, in his annual report, speaking of the local trade, says:

> The outlook for Amoy teas is not considered a hopeful one by either the foreigners or Chinese engaged in it. The increasing competition of the more lightly-taxed growths of Japan, and the diminishing cost of the better flavored Formosa leaf, make it improbable, it is said, that the common, over-taxed stuff produced in the Amoy district can long maintain a footing in the American market, *where alone it is wanted.* Owing to the losses of the native dealers which last season's business has resulted in, a diminution of 40 per cent. is confidently anticipated in the crop of the coming year which will be brought to market.

This reference by an Imperial official to the "common stuff," called Amoy oolong, which "is wanted in the American market alone," is rather interesting reading for the consumers of "the stuff" in the United States. Interesting, because what he says is doubtless true. The stuff should be discountenanced by both dealers and consumers of tea in the United States as being generally (not entirely) of too vile a quality to be complimented with the name of tea. In fact, justice to the public would justify the exclusion of a very considerable percentage of it into the United States. The foregoing does not apply to the Formosa oolongs, which are much superior to and finer flavored than the Amoy oolongs.

TEA ROUTES.

The opening of the Canadian Pacific Railroad and the establishment of the Canadian Pacific line of steamers between Vancouver, B. C., and this coast, has opened a new route for the shipment of tea to the United States. During the past year 2,230,994 pounds of tea have been shipped from Amoy to the United States by this new route in the first year of its operation, while only 1,006,910 pounds have been sent by the steamers of the Pacific Mail,

Oriental, and Occidental steamship lines to San Francisco. This is due to the better facilities and cheaper freight offered by the Canadian steamers to the Amoy tea men, as many of the ships of this line call at this port for tea, which the San Francisco steamers will not do. Why this trade is sought for by the Canadian competitor of the San Francisco lines and neglected by the latter I am unable to explain. Is the Canadian enterprise more wide awake to present and future advantages than its American competitors? It would seem so.

One American sailing vessel loaded a cargo of tea at this port for New York during the year. The remainder of the 18,000,000 pounds was exported to the United States in British steamers via the Suez Canal to New York.—AMOY, *June 30, 1888.*

WM. S. CROWELL,
Consul.

RESULTS OF ROTATION OF CROPS IN BADEN

A field of 10 ares in good condition, worth 300 marks, is put down in the tax book at 250 marks, the cost of cultivation in 1884 being as follows:

The fields need 10 marks' worth of dung or fertilizing stuff: carrying of 2 loads at 3 marks a load; spreading the same, 1 laborer, half a day, at 2 marks a day. Seed: 20 liters of corn, 1.6 marks; 40 liters of spelz, 2.40 marks. Plowing, sowing, etc., 3 marks. Weeding in spring: 1 workman, half a day, 50 pfennigs, or 12 cents. Cutting the grain: 1 day's pay, 2.50 marks. For binding and storing, 3 marks. Harvest results in 80 *garben* (sheaves). Thrashing and cleaning takes 3 laborers 1 day, at 1.50 marks each.

After the corn harvest, stubble turnips were put in. Cost of replowing, 2 marks; turnip seed, 20 pfennigs; the turnips were twice hoed, at a cost of 3 marks; dug up, 3 marks more. The turnip crop gave 20 centners, at 50 pfennigs a hundred.

The wear and tear on machinery, wagons, and implements was not noted. The State tax was 18.5 pfennigs per 100 marks; village or town tax, 40 pfennigs per 100 marks; church tax, 18 pfennigs per 100 marks.

RECAPITULATION, 1884.

Expenses.

	Marks.
State tax	0.46
Town tax	1.00
Church assessments	0.45
Dung	10.00
Transport and spreading of dung	7.00
Seed for first planting	4.00
Plowing and sowing	3.00
Weeding, cutting, binding, etc	6.00
Thrashing and cleaning	4.50

	Marks.
Plowing again and harrowing	2.00
Turnip seed	0.20
Hoeing and digging	6.00
Expenses	6.00
Total expenses (outlays)	44.01

Income.

Spelz	18.00
Corn	14.00
Straw	10.00
Turnips	10.00
Total income	52.00
Clear gain	7.39
Per cent	2.46

The next year (1885) large turnips were planted. The setting of those over the winter cost 1.60 marks. In the spring 3,000 plants, at 70 pfennigs per 100, were bought; 2 loads of dung, at 5 marks a load, 10 marks; plowing and harrowing, 2 marks; 2 day laborers, at 2 marks a day, 1 day setting out plants, 4 marks; the field was sprinkled with 2 barrels of urine or liquid manure, 3 marks; two laborers hoed the field twice, 3 marks; the digging took 3 laborers 1 day, 3 marks; transport to the house, 2 marks. The field yielded 2,500 kilograms, at 1 mark per kilogram.

RECAPITULATION, 1885.

Outlays.

	Marks.
State tax	0.46
Village tax	1.00
Church tax	0.45
Plow	1.60
Plants	3.00
Dung	10.00
Plowing and harrowing	2.00
Pay for setting plants	4.00
Urine	3.00
Hoeing, digging, etc	13.00
Total outlays	38.51
Income	50.00
Clear gain (3.83 per cent. on land value)	11.49

The field remained over winter untouched, except that it was "turned up" at a cost of 1.60 marks. In spring, 1886, it was plowed once, sowed, and harrowed, costing 3 marks. The sowing took 30 liters of barley seed, 4 marks; 2 liters (or ½ kilogram) of clover seed, 3 marks; for mowing the barley, 1 day's labor, 2.50 marks; binding and housing, 3 marks. Thrashing: 3 laborers, at 1.50 marks per day, 4.50 marks. Crop: 6 centners of grain, at 7 marks, 42 marks; 7 centners of straw, at 1.80 marks, 12.60 marks.

RECAPITULATION, 1886.

Outlays.

	Marks.
State tax	0.46
Town or village tax	1.00
Church tax	0.45
Turning up soil	1.60
Plowing, sowing, harrowing	3.00
Barley seed	4.00
Clover seed	3.00
Mowing	2.50
Binding and housing	3.00
Thrashing and cleaning	4.50
Total outlays	23.51

Income.

Barley	42.00
Straw	12.60
Total income	54.60
Clear gain (10.36 per cent. on land)	31.09

The clover crop for 1887 was sold for 30 marks.

RECAPITULATION, 1887.

Outlays.

	Marks.
State tax	0.46
Town tax	1.00
Church tax	0.45
Total	30.00
Clear gain (9.36 per cent. on land value)	28.09

Average results.

Articles.	Year.	Per cent.	Average.
		Marks.	*Marks.*
Field fruits	1884	7.39	2.46
Turnips	1885	11.49	3.83
Barley	1886	31.09	10.36
Clover	1887	28.09	9.36

If the owner or renter of the field did the work himself, he saved or earned for himself:

	Marks.
1884	28.50
1885	20.60
1886	14.60
1887	
Total	63.70
Yearly average	21.23

COST OF FARM LABORERS.

Only farmers owning or renting large farms of from 7 to 15 hectares can afford to keep help. A small farmer, working 6 to 10 acres, can get no more from his farm than a living for himself and family. The cost of keeping 1 man and 1 woman on a farm is put down at the following rates:

For a man.

		Marks.*
Yearly salary		180.00
Board and lodging:		
Breakfast	0.35	
Dinner	0.50	
Supper	0.35	
Daily	1.20	
Yearly		438.00
Total		633.00

For a woman.

Year's salary	120.00
Bread, etc., 1 mark a day	365.00
Present of a dress at Christmas	10.00
Total	495.00

The cost of keeping both man and woman is 1,128 marks ($268.46), or the interest on 2,800 marks, or the profits of a 10 or 12-acre farm.—MANNHEIM, *August 17, 1888.*

J. C. MONAGHAN,
Consul.

TELEGRAPH COMMUNICATION OF NICARAGUA.

The telegraph line of this country, which is owned and managed by the Government of Nicaragua, has recently been extended to San Carlos, which is situated at the east end of Lake Nicaragua, at the point where it discharges into the River San Juan, 120 miles from San Juan del Norte.

The line, as operated during the past three years, connects Managua with Granada, Rivas, San Juan del Sur, Corinto, Massaya, Leon, and other points of importance in the interior and west side of the Republic.

For some months a branch, by way of Granada, extending around west and north of Lake Nicaragua, has been maintained by way of San Ubaldo and San Miguelito, both of these places being on the north side of that lake, the last named pueblo being the site of the most eastern telegraph station. At San Juan del Sur connection is made with the line of cable company by a branch line by way of Granada, so that by the extension of that branch from San Miguelito to San Carlos, where an office has been established by the Government, San Juan del Norte is now within 120 miles of being in reach of communication.

While the Government has been for years proposing to extend the line to this place, the great difficulties to be encountered in the construction of a

* 1 mark equals 23.8 cents.

line of telegraph through the almost impenetrable swamps extending 15 miles west from San Juan will prevent the Government from embarking in an undertaking so difficult in problems of engineering and so costly in execution.—SAN JUAN DEL NORTE, NICARAGUA, *August 1, 1888.*

WM. A. BROWN,
Consul.

EXPORT TRADE OF SANTIAGO DE CUBA.

The chief industry of this consular district is the production of sugar. In this industry the largest increase of exports during the fiscal year just passed is found, Guantanamo alone exporting $377,249.76 worth of sugar more than during the fiscal year 1886–'87. Manzanillo shows an improvement in the export of sugar over the fiscal year 1886–'87 of $91,971.61. This small increase, however, only refers to direct shipments to the United States. During the past fiscal year several sugar estates, some of them the result of American capital, have been completed, and have commenced working in the jurisdiction of Manzanillo. Owing to the cheapness of freights in Cienfuegos, a good deal of Manzanillo sugar has been shipped there by coast steamer, and from there found its way to the United States. In Guantanamo the crop has been larger and the work of grinding cane has been more centralized, the smaller estates sending their cane to the larger ones to grind. In August of last year the Spanish Government took off the export tax of $2.40 net from sugar, but in July of this year has again imposed a tax of $1 per ton for every ton of cargo exported from this island, thereby relieving the vessel from tonnage dues, but putting this tax on the shipper, so that the sugar planter is not much better off to-day than he was before, although, naturally, freights will fall in proportion. A circular issued by a banking house in Manzanillo shows 38 per cent. of the whole crop from January 1 to June 30, 1888, shipped to Cienfuegos, and the rest, with a very small percentage to Barcelona, Spain, to the United States direct. An increase of about 30 per cent. is shown in the export of iron ore from this place. The business of exporting this mineral is entirely in the hands of the Juragua Iron Company, and this gain is the result of the energy and perseverance of this company, as the difficulties to overcome with the Spanish officials and the dearth of working-men are by no means small. The company is increasing its business every day, and is importing labor from Spain, with what result is still to be seen. Of course, having special concessions from the Madrid Government, this company is exempt from the export tax of $1 per ton of cargo exported.

A decrease from $296,194.99 for 1886–'87 to $80,676.72 for 1887–'88 is noticeable in the export of mahogany logs. This is owing to the low prices in our home markets, which do not allow the merchant here to incur the enormous hauling and railroad transportation charges to this port. The mahogany shipped from here has always been of good quality and large, but as the supply is gradually becoming exhausted near the sea-board, and the mahogany now cut comes almost from the center of this province, the busi-

ness is gradually declining here and falling into the hands of an American capitalist, who ships his wood from Nipe Bay, on the north coast. The Santa Cruz wood, being as a general thing small, is mostly shipped to Europe.

The fruit trade, owing to the lack of facilities for rapid transportation, is completely at a stand-still. I have no doubt that were this business properly managed and inducements given the country people to grow fruit, and then establishing a direct line of fruit steamers, within a few years the fruit trade of this consular district could rival the export of fruits from Baracoa to the United States. The soil in the immediate vicinity of this city is especially adapted to the cultivation of pine-apples and bananas, and the coast lands favor the growth of the cocoa-nut palm.

The exportation of dry salted hides has decreased, owing to low prices in New York. The good hides of 30 pounds and upwards are nearly all tanned here, and the smaller ones, averaging 23 pounds, are shipped to New York.

In closing, I would call your attention to two small items, copper and manganese ore, of which only a few tons have been shipped to the United States. An American company has been formed here with the object of working some of the manganese deposits largely found in this province. The chief difficulty this company encounters is transporting the ore, and until they can build a railroad from their mines to connect with the railroad now running some 27 miles into the interior their output of ore must necessarily be small. At present the ore is put up in bags of 100 pounds each and transported to the railroad in ox-carts.

Before the revolution, which I might almost say nearly ruined this province, large copper mines, situated at the village of Cobre, some 12 miles from here, were worked on an enormous scale by several English companies. Now the mines are abandoned and filled with water, the buildings burned down, and the machinery useless. The railroad to the bay of Santiago de Cuba, where the ore was put on board the vessels for export, is partly destroyed, most of the bridges being burned down and the road-bed being washed away in many places.

Some time ago an American syndicate was negotiating with the representatives of these mines, and the last rise in copper gave hopes that something might be done towards reopening the mines, or, at least, pumping out the water from the shafts and precipitating it to gain the oxide of copper, but no agreement, it seems, could be reached.

Comparative statement of exports of sugar from the consular district of Santiago de Cuba, including Guantanamo, Manzanillo, and Santa Cruz.

	1886.	1887.	1888.
Quarter ending March 31	$1,004,130.29	$897,611.19	$1,400,216.50
Quarter ending June 30	1,218,364.62	1,010,196.03	1,427,091.64
Quarter ending September 30	574,572.23	307,002.77	.....
Quarter ending December 31	231,137.62	381,117.41	.....
Total	3,028,204.76	2,595,927.40	2,827,308.14

Statement of exports to the United States from the United States consulate of Santiago de Cuba and dependencies thereof (Guantanamo, Manzanillo, and Santa Cruz) from July 1, 1887, to June, 30, 1888.

Articles.	Quarter ended Sept. 30, 1887.	Quarter ended Dec. 31, 1887.	Quarter ended March 31, 1888,	Quarter ended June 30, 1888.	Total.
Bananas	.....	$50.70	.....	$183.45	$234.15
Cacao	.....	.....	$427.37	.....	427.37
Cedar logs	$864.72	15,180.03	1,416.24	999.56	18,460.55
Cigars	913.66	1,258.84	619.57	899.89	3,691.96
Cocoa-nuts	558.46	1,480.10	1,659.35	3,499.63	7,197.54
Cocus-wood	.....	100.00	.....	47.11	147.77
Copper ore	.....	2,984.96	400.02	305.24	3,690.22
Deer skins	.....	23.30	.....	.....	23.30
Fruit	.....	.....	.....	20.97	20.97
Guava jelly	.....	.....	25.70	.....	25.70
Hides, dry salted	6,221.45	5,491.80	2,013.70	2,633.70	16,360.65
Honey	.....	.....	3,173.34	544.80	3,718.14
Iron ore	37,934.26	32.600.66	70,115.33	125,135.47	265,785.72
Iron-wood	121.82	.....	.....	.....	121.82
Lance-wood spars	.....	186.40	800.00	1,786.66	2,773.06
Mahogany boards	3,255.03	2,386.25	5,073.58	3,761.26	14,476.12
Mahogany logs	35,075.66	38,590.24	1,736.29	5,274.53	80,676.72
Manganese ore	.....	.....	.....	7,322.53	7,322.53
Molasses	3,830.40	.....	11,045.05	19,227.20	34,602.65
Oil barrels (empty, returned)	335.52	305.69	.....	.....	641.21
Old copper, cement	.....	.....	.....	644.51	644.51
Palm leaves, etc	1,515.00	771.50	307.00	460.00	3,053.50
Pine-apples	.....	.....	14.72	539.14	553.86
Returned goods	459.47	170.33	.....	7.27	637.07
Rum (Jamaica)	.....	.....	.....	85.69	88.69
Specie (bullion)	5,784.83	.....	.....	.....	5,754.83
Stallion	.....	.....	.....	401.00	401.00
Sugar	307,002.77	381,117.41	1,400,216.50	1,427,091.64	3,515,428.32
Sundries	.....	.....	3.38	38.70	42.08
Tobacco (leaf)	454.24	4,277.99	18,961.57	2,331.37	26,025.17
Total	404,327.29	486,976.20	1,518,508.71	1,603,244.98	4,013,057.18
Same time last year	795,472.31	351,778.56	1,035,740.29	1,224,586.80	3,407,577.96
Increase	.....	135,197.64	482,768.42	378,658.18	605,479.22
Decrease	391,145.02	.....	.....	.....	.....

SANTIAGO DE CUBA, *August 24, 1888.* OTTO E. REIMER,
Consul.

CONTRABAND TRADE IN SOUTHERN BRAZIL.

The contraband will always keep pace, in some measure, with fair trade.—BURKE.

The declaration of Burke is not only true, as applied to the state of affairs in this province, but the contraband is rapidly extinguishing legitimate trade. Within the year last past it has gained such formidable proportions as to become open, daring, and notorious. It is, perhaps, not incorrect to say that it is more extensively carried on in the province of São Pedro do Rio Grande do Sul than in any other country that attempts to enforce the collection of duties on foreign imports.

The opportunities afforded for this trade are excellent and various, and the causes to which its existence and increase should be properly ascribed are the excessive import and export duties levied by both the Imperial and provincial governments.

A tariff is imposed on almost all articles of import by the Imperial Government, then again, on many articles is imposed a tariff by the provincial government of the port in which the goods are landed; for instance, on the tariff-list for the Empire coal is marked free, yet in this port a duty of 5 per cent. is charged by the provincial government. Tariff is collected here on articles imported from other provinces (Brazilian products), not on all, but on some of them. In this province there are slaughtered every year over 1,000,000 head of cattle for export.

The establishments where the cattle are killed and the beef cured are called *saladeros*, and they constitute the industries of the country. Instead of fostering and protecting that which constitutes the commercial life of the province a direct duty of 13⅛ per cent. is levied on all hides exported, and 4⅛ per cent. on *xarque*, or dried beef, by the provincial government.

As a result the large *saladeros*, which a short time since were all located in the eastern part of the province near the large cities, are moving to the west, where they can run the hides and beef across the western boundary line into the Argentine Confederation or the Republic of Uruguay. When once across transportation is ample and easy by the Uruguay River to Montevideo, where no export duty is charged by the Government of Uruguay, and where hides command a higher price, for they are sold as Uruguayan products. Hides taken from cattle killed in the Rio de la Plata region are thicker, on account of the cooler climate, and are worth more money in the markets.

It is, therefore, decidedly to the interest of the cattle breeder and owners of *saladeros* to dodge the Brazilian officials, go to market through the back door of the western frontier, save the export duty, and realize more money in Montevideo for hides than they could get in the markets at home.

There is still another thing which injures the trade of all the cities in the eastern part of this province; a vessel of from 200 to 250 tons burden, sailing, can not enter and clear this port without incurring an expense of at least $435 for bar dues, anchorage, towage, and pilotage, consequently freight must be higher to and from this port than the rates for other more favored points.

The amount of Brazilian products that go over the frontier is not known, but the following figures show a decline in exports to the United States from this port:

For the quarter ending March 31, 1887, exports to the United States amounted to	$284,005.82
Ending March 31, 1888	212,631.40
Decrease	71,374.42
Ending June 30, 1887	$232,054.84
Ending June 30, 1888	89,727.27
Decrease	142,327.57

The exports to the United States, which consist of wool, hides, hair, and horns chiefly, in the six months of 1888, as compared with the same

months of 1887, declined in value $213,701.99, and I am confident, from the general complaint of exporters, that there is a corresponding decline in the value of the same articles exported to other countries.

São Pedro do Rio Grande do Sul is the most southern province in the Empire of Brazil, lying between the 27th and 34th parallels of south latitude, bounded on the north by the province of Santa Catharina, on the east by the Atlantic Ocean, on the south by Uruguay, and on the west by Uruguay and the Argentine Confederation, the boundary line, however, between this province and the latter-named country being the Uruguay River, and has a western frontier line of over 600 miles, across which the extensive contraband business is now carried on by both exporters and importers.

To reach Brazil with contraband goods, shipments are made to Montivideo, from thence up the Uruguay River by steamers to Concordia, in the Argentine Confederation, where goods are transported to a railroad, on account of the falls in the river, and taken to Salto, from which place they are re-shipped in steamers and delivered along the frontier of this province at such points as best suits the contraband trade. The goods are then loaded into large bullock carts, and under the escort of armed men a train of a dozen or more of these carts will start for an inland town, where the business house of the importer is located, many of these goods eventually reaching the cities of Porto Alegre, Pelotas, and Rio Grande do Sul.

The Rio Grande and Bagé Railroad, which runs from this city almost west to Bagé, 174 miles, and within three days' travel of the Uruguay frontier, formerly shipped merchandise from this city west; now a large quantity of general merchandise comes from Bagé, last to Pelotas and Rio Grande. And in the article of Chinese tea alone, I was informed by the general superintendent of the road that as much as 1 ton per month passed over the road from Bagé to the east, much to Pelotas and Rio Grande. There is no doubt but every ounce of it was contraband, smuggled across the line, as the duty is 34½ cents per pound.

So earnestly and frequently has the Government been appealed to by commercial associations of the cities of this province for aid to suppress this trade, or for legislation that would make it unprofitable, that the late Minister of the Revenue, Senator Francisco Belisiario Soares de Sousa, in a recent report said in substance that the suppression of the contraband trade in this province was one of the most important things to be considered by the Government, that proper means had been resorted to by the Government to suppress it, but it was evident it had not succeeded, but instead the business was increasing. Among other measures by which the evil was sought to be remedied was a special tariff for this province, which went into effect January 1, 1879, abating the duty on thirty-five articles most consumed in the province, and, as compared with the tariff of 1874 for the Empire, it was relatively 42.97 per cent.; with tariff, 1881, 44.54 per cent.; with tariff, 1887, 47.49 per cent. The tariff laws passed on these latter duties did not extend to this province. The result, the minister claimed, did not corre-

spond with the advantages expected, and thus the great difficulty in the way of a suppression of the traffic was the establishment of a fiscal police on and along the frontier as vigilant and honest as it should be.

On the 14th of February last the Chamber of Commerce of Rio Grande do Sul prepared an address to Her Imperial Highness the Princess Regent, in which the state of trade was reviewed, noting that the bar commission and Imperial authorities were doing nothing toward the improvement of the bar. After referring to the agricultural industry, and its importance in every respect in the colonies, and the pastoral interests of the province generally, it proceeded to show that all legitimate business was on the decline, and that every demand for wholesome and beneficial legislation for the province has been ignored by Parliament, and that the great industries of the country, the *saladeros*, were moving to the west, and the wealth of the country was passing out through the ports of Uruguay.

The Chamber of Commerce of Porto Alegre, on the 19th of May last, also prepared a lengthy representation to the Princess, in which it was agreed that, although the duties were materially reduced under the special tariff law of 1879, yet the Government received more revenue from imports in the three years next succeeding that year than it did under the higher rate imposed for the three years immediately preceeding the establishment of the special tariff, and that the only remedy against contraband trade is a still further reduction of tariff on imports and exports to such an extent that smuggling will be unprofitable.

The following statement shows the amount of tariff collected on importations for three years immediately before and for three years next after the special tariff for the province of São Pedro do Rio Grande do Sul, which, as before stated, was passed in 1879:

For fiscal year 1875–'76	$1,620,290.17	
For fiscal year 1876–'77	1,661,012.86	
For fiscal year 1877–'78	1,437,328.72	
Total for three years before 1879		$4,718,631.75
For fiscal year 1878–'79	1,896,839.84	
For fiscal year 1879–'80	2,124,026.24	
For fiscal year 1880–'81	2,030,762.54	
Total for three years after 1879		6,051,628.62
Difference in favor of special tariff		1,332,996.87

While the special tariff act of 1879 benefitted legitimate trade for a time, yet, within the last two years, smuggling has increased to an alarming extent; taking the receipts of the custom-houses in Porto Alegre and Rio Grande for the first four months of 1887, and compare them with the first four months of 1888, the increase of the business can be better understood, as shown by the following statement:

Months.	Rio Grande do Sul custom-house.		Difference.	
	1887.	1888.	More.	Less.
January	$98,083.82	$87,509.32	.....	$10,574.50
February	94,745.15	78,808.77	.....	15,936.38
March	107,623.72	89,799.13	.....	17,824.58
April	93,887.45	89,062.03	.....	4,825.42
Total	394,340.14	345,179.29	.....	49,160.88

Months.	Porto Alegre custom-house.		Difference.	
	1887.	1888.	More.	Less.
January	$103,660.33	$106,083.25	$2,422.92	.....
February	124,923.08	103,331.76	.....	$21,590.87
March	153,150.97	92,565.11	.....	60,630.86
April	131,635.78	82,682.06	.....	48,953.72
Total	513,370.16	384,662.18	2,422.92	131,175.45

Receipts less in Rio Grande do Sul	$49,160.88
Receipts less in Porto Alegre	128,752.53
Total in four months	177,913.41

On the 16th of June the Chamber of Commerce at Porto Alegre went so far as to pass resolutions asking the Imperial Government to take immediate steps, by military force or otherwise, to suppress the contraband on the western frontier, and if it did not, no more goods would be dispatched from the Porto Alegre custom-house by the importers, and if the Imperial Government thought proper, the resolutions requested that the president of this province be vested with the right to use such means as would extinguish the contraband trade at once. Copies of these resolutions were telegraphed to the chambers at Pelotas and Rio Grande asking similar action there; the chamber of Rio Grande was called in meeting, but, whilst it deplored the condition of affairs, it concluded to await the result of their February address to the Princess, and declined to pass resolutions which might be construed as threats against the Government at this time. All fair minded importers are of opinion that there is but one remedy for the evil, and that is to still reduce the tariff on imports, make them so low that there will be no inducement to enter the province through Uruguay over the western frontier, but that its ports will be practically free.

As the matter stands to-day no merchant who imports his goods and pays the tariff can compete with those who smuggle and who sell smuggled goods. The fact is that a number of reputable merchants have been compelled to quit business or suffer great financial loss in this part of Brazil.—RIO GRANDE DO SUL, *July 12, 1888.*

LEBBEUS G. BENNINGTON,
Consul.

GERMAN FAMILY BUDGETS.

[From the Bulletin de Statistique et de Législation Comparée, July, 1887.—Translation.]

In the Staatswissenschaftlichen Seminar, founded at Halle by the learned Dr. J. Conrad, Mr. Carl Hampke publishes a study of the budgets of private families. In it are found the results of the principal researches made during fifteen years to measure the prosperity of populations by the expenses and revenues of a typical family and by the prices of the necessaries of life. The author has added a personal inquiry bearing upon the expenses of certain families living in Halle, and upon the influence of an increase in the cost of living in what bears upon their budgets.

The following are the annual expenses of these families:

Nature of expenses.	Working-man.*		Rentier.†		Manufacturer.‡		Superior employé.§	
	Amount of expenses.	Proportion.	Amount of expenses.	Proportion.	Amount of expenses.	Proportion.	Amount of expenses.	Proportion.
	Marks.	*Per Ct.*	*Marks.*	*Per Ct.*	*Marks.*	*Per Ct.*	*Marks.*	*Per Ct.*
1. Food	555.40	52.9	1,246.00	40.90	2,211.00	28.0	2,842.00	16.0
2. Clothing	163.70	15.8	314.04	10.30	863.25	10.5	1,554.00	8.5
3. Lodging	140.15	13.4	552.85	18.10	1,234.47	15.5	4,000.00	22.3
4. Fire-lighting	59.70	5.7	91.70	3.01	238.93	3.0	470.00	2.6
5. Medical attendance	23.15	2.2	75.00	2.50	211.43	2.7	675.00	3.7
6. Cleanliness	22.15	2.1	30.00	1.00	278.75	3.5	1,350.00	7.4
7. Savings	20.80	2.0	10.00	30	250.50	3.1	915.00	5.0
8. Education	18.60	1.8	317.82	10.40	565.46	7.1	1,210.00	6.7
9. Taxes	10.85	1.0	70.56	2.30	454.00	5.7	895.00	4.9
10. Service	.....	.....	73.00	2.40	450.00	5.7	2,750.00	14.7
11. Pleasures	14.40	1.4	190.50	6.20	501.75	6.3	1,150.00	6.3
12. Sundries	20.30	1.7	73.08	2.59	712.76	8.9	335.00	1.9
Total	1,049.40	100.00	3,045.15	100.00	7,945.30	100.00	18,206.00	100.00
Total expenses, 1 to 5	942.20	90.00	2,279.59	74.81	4,732.08	59.7	9,601.00	53.1
Total expenses, 5 to 12	107.29	10.00	765.56	25.19	3,213.22	40.3	8,105.00	46.9

Mr. Hampke has calculated upon the mean price in 1851–'60, 1861–'70, 1871–'75, 1876–'80, and 1881–'85 what these four families of Halle would have expended annually in each of these different periods had the same regulations of life continued.

In the absence of prior returns, the taxes of the period 1861–'70 serve as the basis of comparison. It will be seen that in Halle the families of working men now pay a little less in taxes than they have for thirty years; but, on the contrary, much more for their lodgings. The expenses classed under the head of propriety will be found less heavy than at any previous period for workingmen, on account of the low price of soap. The rise in the wages paid wash-women was the cause of increasing these expenses in other families.

* Average budget of three families of working people: (1) Husband (a painter), wife, and child of five years; (2) husband (a road keeper), wife, and two children, five and ten years old, respectiveiy; (3) husband (a tailor) and six children, eldest fourteen years old.

† The family of the *rentier* comprises the husband, wife, a boy of eighteen years, another of ten years, and a daughter of three years.

‡ The family of the manufacturer comprises the husband, wife, boy of eleven years, another of seven, a daughter of nine, and a servant.

§ The family of the superior employé comprises the husband, wife, a child of more than fourteen, three of less than fourteen, and four servants.

He has represented by 100 the expenses of 1851–'60, and has obtained for the other periods the following proportional variations:

Families.	Food.	Lodging.	Cleanliness.	Taxes.	Service.
Period 1851–'60.					
Working-man	100.0	100.0	100.0	.....	100.0
Rentier	100.0	100.0	100.0	.....	100.0
Manufacturer	100.0	100.0	100.0	.....	100.0
Superior employé	100.0	100.0	100.0	.....	100.0
Period 1861–'70.					
Working-man	101.0	125.0	101.0	100.0	.....
Rentier	104.0	116.0	101.0	100.0	112.0
Manufacturer	103.0	107.0	101.0	100.0	105.1
Superior employé	100.7	105.0	101.0	100.0	105.4
Period 1871–'75.					
Working-man	125.0	166.0	95.0	106.7	.....
Rentier	123.0	142.0	116.0	103.4	120.0
Manufacturer	122.0	128.0	118.0	100.5	119.6
Superior employé	118.0	126.0	116.0	100.6	128.7
Period 1876–'80.					
Working-man	122.8	168.0	93.0	109.8	.....
Rentier	125.7	150.0	125.0	106.6	135.0
Manufacturer	125.0	130.0	131.0	101.9	130.3
Superior employé	120.7	131.0	119.0	102.9	139.0
Period 1881–'85.					
Working-man	121.8	190.0	84.0	81.6	.....
Rentier	128.7	101.0	128.0	101.1	135.0
Manufacturer	126.0	129.0	132.0	108.4	134.8
Superior employé	123.0	130.0	131.0	103.5	140.0

SILVER MINES AT JEHO.

Three hundred miles northwest of Tien-Tsin, and half that distance north of the Great Wall, are the only silver mines known to be worked in all China. The mines are situated in the prefecture of Chêng-tê-tu, a jurisdiction embracing a tract of country as large as the State of Pennsylvania, nominally belonging to the province of Chihli, but really under a separate local government centered in the city of Chêng-tê-tu, better known as Jêho, where a military governor is stationed, who is appointed direct by the Emperor, and holds his office for three years. This country forms the greater part of eastern Mongolia, and extends north of the Great Wall from the longitude of Peking eastward to the sea, and from the Great Wall northward to the Russian frontier of Siberia. It is very mountainous, sparsely populated, badly watered, and has but little soil suitable for cultivation. The trade and tillage are everywhere in the hands of Chinese settlers, the native Mongols not being met with save in the extreme northern part of the country, where they devote themselves entirely to raising cattle.

There are two well-known silver mines 50 miles north of the city of Jêho, one called Yen Tungshan (Chimney Mountain), the other Ku-shan-ty (Orphan Mountain), 10 miles apart. These mines have been worked by

the natives for thirty years with more or less success, and during that time have probably yielded silver to the value of about $2,000,000, the mining and smelting being done entirely by Chinese methods. The ore is argentiferous lead or galena, and is found in thin, pay streaks, scattered through veins which occur between porphyry and limestone. Both mines are in high hills, which have been burrowed with native workings and stripped of all ore found above water-level near the base of the hills. During the past ten years the mines have produced very little ore; the native miners reached the water-level, and so came to the end of their resources, as they had no means to remove the water. Although these miners work in a very primitive way, with rude tools and no blasting-powder, pumps, or machinery of any kind, the results they have accomplished are remarkable. Long, tortuous galleries, large enough to admit a man on hands and knees, have been cut through the hardest rock in every direction, the ore and waste-rock being laboriously carried to the surface in bags. The treatment of the ore thus extracted is also remarkable, for these uninstructed Chinese have, by long experience, discovered for themselves the rudiments of the science of smelting and refining silver ores, and are able to produce pure silver with the simplest possible appliances.

Of late years the proprietorship of these mines, worked under a license from the Government, for which a royalty of 33 per cent. of gross yield has been paid, has passed from hand to hand with steady loss to the investors. The last proprietors, a native joint-stock company, abandoned the place in despair after losing all their capital, about $250,000.

At this time the condition of the mines was brought to the attention of the grand secretary, Li Hungchang, viceroy of this province, and he determined to have them carefully examined and reported on by a foreign mining expert. The viceroy had engaged the services of Mr. John A. Church, of New York, a mining expert of reputation in the United States, and it was arranged for Mr. Church to examine the mines. He spent several months of last year at this work, and reported to the viceroy that the prospects justified an outlay of money for pumping and hoisting machinery and for labor to open up the mines fully for a more extended survey. The viceroy agreed to this, and furnished the funds for the machinery, which was bought in San Francisco of the Union Iron Works. Work has now been going on at the mines under Mr. Church's supervision for six months. Shafts have been sunk at both mines and the water pumped out of one. Native miners have been taught the use of foreign tools and explosives, so that the results of one day's work by the new method are greater than those of one month by the old. Mr. Church has a staff of four Americans (an assayer, an engineer, and two miners), and has been able to keep work going on at both mines with a force of 200 native workmen. He has now opened up the mines sufficiently to form a definite opinion, which is a favorable one, and the work promises to be permanent and successful. More machinery,

making a total of about $50,000, has been ordered from the United States, and the success of these mines is likely to open up a much larger field for similar enterprises.

GOLD MINES ON THE AMOOR RIVER.

Subsequent to the opening of the above silver mines by Amercan engineers and machinery the gold fields on the Chinese or south side of the Amoor River were brought prominently forward. The placer workings on the Mo River, a small tributary of the Amoor, have long been famous, though in a rather vague way, as a rich gold field. The immense distance of this field from the nearest Chinese towns in that desolate part of northern Manchuria has hitherto discouraged all thoughts of working them systematically. But last year the Chinese governor of the Amoor River district gave serious attention to the question and sent an official to examine the fields. The official returned after six months of travel and investigation, and though he reported immense difficulties to be overcome in reaching and living in those remote fields, yet the gold was so plentiful that it would repay all efforts.

The governor, therefore, approved of the report and memorialized the Emperor favorably. A decree from the Emperor authorized the mines to be opened, and the official in question, Li Chin-yung, was appointed director of the company to be formed. Mr. Li lately visited Tien-Tsin and Shanghai and endeavored to obtain a loan from the foreign banks and syndicates, but they all declined looking upon the project to invest money in that remote and uninhabited region as but little less than an investment in the moon. Nothing remained but for the Chinese Government to furnish the money, and this has been done by the viceroy, Li providing 100,000 taels and the governor of Amoor 30,000, making 130,000 taels capital given to Mr. Li, who has gone to Shanghai to find men and machinery to take to the Amoor River.

This shows the earnest desire of the Government and high officials to develop the mineral resources of this country. Such efforts can not but do for China what mining activity has accomplished in other countries, and especially in the United States, namely, strengthen the Government, enrich the people, and open up new districts and highways for the general good. — TIEN-TSIN, *July 14, 1888.*

E. J. SMITHERS,
Consul.

The number of Austrian savings banks is now about 400. The total deposits, without reckoning those of the post-office savings banks, amount to 1,161,851,000 florins, of which 680,000,000, or 58½ per cent., are invested in mortgages; 54,000,000, or 4⅝ per cent., in bills of exchange; 285,005,000, or 24½ per cent., in stocks, etc.; 18,000,000 are in cash, and 72,000,000 in short loans.

IMPORTS INTO RIO GRANDE DO SUL.

This province, São Pedro do Rio Grande do Sul, has a superficial area, variously given by geographers and engineers at from 118,755 to 140,000 square miles. Its exact limits cannot be determined, depending somewhat upon the result of legislation and international treaty. However, at the least, it exceeds the aggregate area of the States of Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, and New Jersey by 1,163 square miles. It is the most southern province in the Empire, lying between the 27th and 34th parallels of south latitude, bounded on the east by the Atlantic Ocean, on the south by Uruguay, and on the west by Uruguay and the Argentine Republic. The temperature in the interior ranges from 27° above zero (F.) in winter to 90° in the summer. On the coast it is considerably warmer, as it never freezes in this city, which is in 32° south latitude.

The interior is slightly broken by the termination of a range of mountains extending southwest from the province of Bahia, a distance of 1,600 miles, called in this province Sierra de Martinho. The highest point in this range—in this province—is 3,000 feet; the mean elevation, however, is about 1,800 feet. This range of mountains constitutes the dividing line of the two great hydrographic basins into which this province is divided, one being drained by the Uruguay River and its tributaries and the other by the numerous feeders of lakes Patas and Mirim, which lie in a chain a short distance inland, parallel with the entire coast of the province. The lands of the Uruguay valley, and especially those along the coast are very flat.

The population of the province in 1877 was 944,616, of which number 8,436 were slaves, now free by the decree of May 13, 1888. About 200,000 of the white population are of foreign birth, chiefly Italians and Germans; however, German immigration is falling off now, and the Italians far exceed all other nationalities combined.

These immigrants have settled in separate colonies, which are thrifty and industrious, the Italians cultivating the vine and the Germans grain and vegetables. They labor under some disadvantage at present in not having proper and sufficient means of transportation to market for the products of their labor, but they seem patient under the circumstances, and no doubt good roads will soon be built throughout these colonies for their special benefit. As a rule immigrants have not the means to engage in cattle raising, so these colonies are devoted to agriculture and vinticulture.

This province has great advantages of climate not enjoyed by any other province of the Empire. Within it are grown all the tropical fruits—peaches, pears, and vegetables of every kind the year round in the open air. In the interior can be grown wheat and corn, and the pasturage is unsurpassed in the country. The chief industry of the country, however, is cattle raising,

of which about 1,000,000 head are slaughtered annually at the different *saladeros*, the meat dried, consumed locally, and exported. All the hides are exported except about 100,000.

There are no means of ascertaining what portion of the province could be cultivated, but certainly the greater part of it. Its sources of wealth are various, but all enterprises for their development are retarded by individuals who have exclusive grants or special privileges for a term of years from the Government, and who fail to operate under them, or permit any one else to do so without charging a large royalty for these grants and privileges, and as a result there is but little development of the natural resources of the country.

Lead, silver, iron, and copper, which are known to exist, are but little worked. The first three are not found in very paying quantities; but the copper ore is very rich, yielding 60 per cent. pan metal. There is some bituminous coal, but of an inferior quality, and the operation of mining seems to be attended with too much expense to be profitable, consequently most of the coal consumed by steamers, locomotives, and gas-works is imported from England, and is worth here $18 per ton.

In this province there is excellent marble, both white and colored; also granite and agate, much of the latter being exported to Europe. The chief towns of the province are Puerto Alegre, the capital, with a population of 40,000; Pelotas, 10,000; Rio Grande, 14,000; and Jaguarao, in the eastern part; Santa Maria, Santa Gabriel, and Santa Anna de Liveramento, in the interior; Uruguayana, Bagé, Itaquy, and Alegrete in the western part.

To show the state of trade in this province I append, as a part of this report, tabular statements, upon which it is unnecessary to make any comment, as the figures speak for themselves. The figures are not now obtainable for the fiscal year 1887, but will be published in the next report of the local chamber of commerce, which will not be completed for two months yet, at least. Upon my application to A. H. Edwards, Uuited States Consular Agent at Puerto Alegre, for simply the consolidated returns of exports and imports of the province for the fiscal year 1887, and the total amount imported from the United States, he replied, under date of the 3d instant, as follows:

> The official value of all imports from July 1, 1886, to December 31, 1887, was $6,349,029.50; exports for same period, $1,364,217. It is impossible to obtain the figures for the year 1887 only, as the above eighteen months have been taken together for statistical purposes, in order to change the fiscal year from July to June. I could not obtain the separate imports of American goods, as discrimination of the origin of imports is no longer kept up. So far as imports are concerned, I consider the above figures of little value, as official valuations bear scarcely any relation to the real cost of goods, and, of course, no account is had of the immense contraband trade.

Mr. Edwards being a merchant of much experience is well qualified to judge of the correctness of official valuations of imports. So far as the exports

are concerned, the figures given to Mr. Edwards are certainly misleading. The records of this office show that during the eighteen months included in the period from July 1, 1886, to December 31, 1887, there was exported from this province to the United States alone products to the value of $1,170,545.83, lacking only the sum of $113,661.17 of being the value of the entire exports of the province as reported by the revenue department of the province. There are, also, other difficulties in the way of ascertaining the country from which goods are imported; a large per cent. of imports are marked at Rio de Janeiro "foreign goods in transit," and are so entered at the custom-house here. Then, by indirect transportation, countries are not properly credited; for instance, the official figures in the custom-house of this city show that from July 1, 1885, to June 30, 1886, there was imported kerosene or petroleum and gasoline, from Uruguay, to the amount of $8,012, and for the same time, from the United States, to the amount of $2,859.50. The fact is that it all came from the United States, though the greater part came through an Uruguayan exporter, and so was entered as an export of that country.

Wheat flour is the chief article of American imports in the province, and it has lately found a very formidable rival in the markets here in the flour imported from Uruguay and the Agentine Republic. In former years wheat was extensively cultivated in this province, but on account of some failures of crops from blight wheat raising has been abandoned. Parts of the country are remarkably well adapted to its growth, the yield being equal to that of the best wheat-growing sections of the world, but the great drawback to its culture now, as in former years, is the lack of milling machinery throughout the province. However, a new mill has been started in Pelotas, grinding wheat from the Rio Plata at the rate of 1,000 tons per annum. The best quality of this flour brings $7 per barrel, best brand of American flour $8 per barrel, and the best brand of Rio Plata $7.25 per barrel.

The superiority of the American flour is well known and commands a higher price in the market. I am not prepared to say that the United States flour exported will lose any trade under the change of circumstances, but am fearful that it will not increase as it should with the natural increase of demand for flour. It must be admitted that the Rio Plata exporter can put a barrel of flour on the wharf at Rio Grande for one-third the cost to bring it from the United States, and much fresher from the mills. The importation of flour in barrels has increased over 25,000 barrels in this province since 1885. The total importation is now not less than 100,000 barrels, of which 37,000, consigned to a large importer of this city, are received from the Rio Plata. To show the relative importations of flour, there was dispatched from the custom-house of Rio Grande alone, from July 1, 1885, to June 30, 1886, 36,019 barrels from the United States, 15,121 from Uruguay and Argentine, and 9,217 from all other countries. The Rio Plata flour has not only found a market in this province, but at the present time has a fair quotation in Rio de Janeiro, and is shipped as high as Bahia and Pernambuco.

There are a few other articles of American manufacture which, by their superiority of make and quality, have established a reputation and demand which remains unshaken by the cheap and worthless imitations from Europe, such as novelties, dental instruments, axes, lamps, etc. There should be a sale here for American furniture and pianos, but the great difficulty about the introduction of American goods is that there are no American merchants here, and as a consequence no American goods are sold except those that compel their purchase by reason of their adaptation to the wants of the people and excellent qualities.

The necessity for an extensive foreign trade has not yet arisen in the United States, for which every man who is an operative should be thankful. If that necessity were at hand how could the United States compete in these markets with the fabrics of France, Germany, and England where labor is so poorly paid.

The leading importers here are English and German houses, which are, in most instances, branches of principal houses in Europe and England. It is nothing more than natural that they should endeavor to increase the demand for the goods of their respective countries. The German merchant has pushed wonderfully fast, coming from third or fourth place a few years ago to very likely first now with his imports.

To establish a trade in American goods here I should be at loss to suggest a place that would succeed. I am confident that drummers would do but little good unless a very large line of samples was carried; then, again, I do not think he would succeed, because the drummer would be absent, in all probability, when the order arrived, and the least discrepancy would be an occasion of much complaint. As a rule the average Brazilian merchant does not believe much in anything unless he has an ocular demonstration of the fact; he wants to see what he buys, and, by the way, the rule is not a bad one. I am of opinion that the suggestions of H. Clay Armstrong, United States Consul-General at Rio de Janeiro, contained in his report, which was published in No. 82 of the CONSULAR REPORTS, offer the best solution of the question, "how to establish," when it is desired to establish American trade. His suggestions were that exporters, manufacturers, or any others who desired, should establish an information bureau, stocking it with a full line of samples, requiring the agent to give such information as would be of value in trade, and to fill orders from the samples on hand. Until the way was made for a permanent sale of American goods, by that or similar methods, I would deem an investment in goods for trade in this country a bad one. To establish a house here without a knowledge of the wants of the people, their languages and business methods, would involve great loss undoubtedly.

Shipping returns of the harbor of Rio Grande do Sul for the year 1885.

Nationality.	Sailing.		Steamers.		Total.	
	No.	Tons.	No.	Tons.	No.	Tons.
British	108	17,938	37	14,784	145	32,722
Brazilian	124	18,600	130	50,972	254	69,572
Dutch	63	10,359	.....	.....	63	10,359
German	66	9,171	.....	.....	66	9,171
Danish	51	7,522	.....	.....	51	7,522
Norwegian	43	6,892	.....	.....	43	6,892
Portuguese	19	4,357	.....	.....	19	4,357
United States	8	2,056	.....	.....	8	2,056
Other nations	32	4,984	.....	.....	32	4,984
Total	514	81,879	167	65,756	681	147,635

Shipping returns of the harbor of Rio Grande do Sul for the year 1886.

Nationality.	Sailing.		Steamers.		Total.	
	No.	Tons.	No.	Tons.	No.	Tons.
British	59	10,609	39	15,834	98	26,503
Brazilian	120	21,712	108	41,950	228	63,662
Dutch	43	7,279	.....	.....	43	7,279
German	52	7,864	.....	.....	52	7,864
Danish	53	7,746	.....	.....	53	7,746
Norwegian	57	11,376	.....	.....	57	11,376
United States	1	268	.....	.....	1	268
Other nations	49	9,595	.....	.....	49	9,595
Total	434	56,509	147	57,784	581	114,293

In the year 1887 the number of vessels of all classes and nationalities entering the harbor of Rio Grande do Sul was 534, of which four were under the flag of the United States, having an aggregate of 999 tons. Cargoes were flour and railroad supplies.

The following shows the imports into Rio Grande do Sul during 1886:

Cotton goods	$582,411.72
Flour	379,207.52
Wines and liquors	446,622.24
Woolen goods	296,696.52
Coffee	40,617.44
Sugar	503,009.64
Iron and steel	152,926.28
Skins and leather	91,974.52
Linen goods	50,689.32
Tobacco	20,637.76
Other articles	952,206.52
Total	3,516,999.48

The imports for the last six months of 1885 amounted to $1,597,258.08.

The following statement shows the exports from Rio Grande do Sul during the year 1886:

	Number.	Tons.
Salted hides *	362,778	.....
Dry hides	395,744	.....
Horse-hides	29,128	.....
Horse-hair	.....	646
Wool	.....	1,101
Bone-ash	.....	6,230
Tallow (hard)	.....	2,254
Tallow (soft)	.....	1,600
Horns	1,031,957	.....
Dried beef	.....	22,362
Calcined bones	.....	150
Artificial guano	.....	270
Artificial phosphate	.....	875

The following shows the value of imports at Rio Grande do Sul by countries during 1886:

Brazil	$790,357.64
England	696,374.36
Germany	691,268.16
Italy	50,248.88
United States	125,427.84
France	261,848.84
Uruguay	303,226.00
Other countries †	608,144.76
Total	3,516,999.48

The imports from the United States for the last six months of 1885 amounted to $95,353.

The following shows the number and nationality of vessels cleared from Rio Grande do Sul for the United States during the years 1886 and 1887:

	1886.	1887.
Danish	1	3
British	2	1
Norwegian	3	5
Dutch	5	3
Swedish	3	4
German	2	1
Portuguese	1	1
Total	17	18

Manufacture in this province is not extensive, there are but two establishments in the province worthy of the name of factory, the woolen and cotton mills of Rhinegantz & Co., in Rio Grande do Sul, the first started

* The number of hides exported to the United States was 267,273, valued at $804,076.91. Value of all exports to the United States, $1,226,749.73.

† Of this amount ($608,144.76) the sum of $242,000 represents the value of goods reshipped at Rio de Janeiro, and classified upon arrival here simply as "foreign goods in transit."

in 1874, and the latter in 1880. The woolen used in the factory is the product of this province, and the cotton comes from Pernambuco. The machinery is of the latest and most improved kind, and the work is superintended by men who have had much experience in Europe. The machinery is driven by three engines of 190 horse-power. Four hundred operatives are employed, of whom 60 per cent. are Brazilians, 15 per cent. Portuguese, 10 per cent. Italians, and 15 per cent. of other nationalities, and the wages paid them amount to $100,000 per annum.

Flannels, cloths, cassimeres, and blankets of the best quality are manufactured, and for a very reasonable price. The total value of the woolen goods turned out per annum is $270,000, total value of cotton goods $97,675 per annum.

In connection with this factory is a school which all children of the operatives must attend a certain number of hours each day after they have arrived at a certain age; there is also a free club-room, music hall, billiard room, and a small library, and all the operatives have free medical attendance.

The woolen mill was the first in the Empire, and has the contract for the manufacture of cloth for the army.

Taking the mills as a whole the business is well conducted, and its productions will compare favorably with those of other sections of the world, and their existence and successful operations reflect great credit upon the energetic Brazilians of Rio Grande do Sul, who built them as an experiment a few years ago to ascertain if the wool of this country could not be profitably manufactured at home. — RIO GRANDE DO SUL, *July 19, 1888.*

LEBBEUS G. BENNINGTON,
Consul.

EMIGRATION LAW OF SWITZERLAND.

FEDERAL LAW CONCERNING THE OPERATIONS OF EMIGRATION AGENCIES.

The Federal Assembly of the Swiss Confederation in execution of article 34, section 2, of the federal constitution and in revision of the federal law of December 24, 1880, decrees:

ARTICLE 1. The supervision of the operations of emigration agencies, provided in article 34, section 2, of the federal constitution, is exercised by the Federal Council with the concurrence of the cantonal authorities.

It will be the particular duty of the latter (*a*) first to examine if the conditions which article 3 of the law granting a license or the approval of the nomination of subagents prescribes are complied with by the agents or subagents; (*b*) to pronounce penalties in cases, where not observed, according to their competence, under articles 18 and 19 of the present law.

ART. 2. Whoever wishes to engage in professional transportation of emigrants or sale of passage tickets, must procure a license for that purpose, issued by the Federal Council. If the emigration agency is constituted in form of a society, the corporation act, or a certified copy thereof, giving the name of the incorporation, shall be deposited with the Federal Council as well as to communicate all future changes. The Federal Council will give notice to the cantonal government of these facts.

ART. 3. Licenses can only be granted to such agents or representatives of emigration agencies who can prove:

(1) That they enjoy a good reputation and their civil and political rights.

(2) That they are acquainted with the emigration operations and are enabled to ship emigrants safely.

(3) That they have a regular domicile in Switzerland. The fee for a license shall be 50 francs.

The Federal Council is authorized to withdraw a license if the holder does not comply with the conditions provided in the present article (sections 1 to 3), or proves himself guilty of grave and repeated offenses against the prescriptions of the présent law (article 18), or participates in a colonization enterprise which the Federal Council has denounced. The agent surrendering his license must make a declaration to that effect to the Federal Council and return the license.

Agents or their subagents can not be in service of a maritime company or transatlantic railroad company, nor associated with such a company.

ART. 4. Each emigration agency on receipt of its license must deposit with the confederation a security of 40,000 francs. For each subagent the agencies have to deposit a further security of 3,000 francs. Persons wishing to engage professionally in the sale of passage tickets must deposit a security of 20,000 francs. The security shall consist of federal or cantonal bonds (obligations) or other valuable securities.

If the value of the security deposited should diminish from any cause whatever the agency must promptly make it good, and, failing to do so, the Federal Council can withdraw the license of said agency. The security can not be returned before the lapse of one year after annulling the license. If at that time reclamations exist against the agent a corresponding amount will be retained until the adjustment of the same. The reimbursement of security to be furnished, according to the number of subagents, will take place each year in proportion to the diminution of this number.

The security serves as a guaranty for reclamations by authorities or emigrants or their assigns which could be brought according to the law.

ART. 5. It is permitted to agents to be represented by subagents. These have to comply with the conditions provided in article 3, sections 1, 2, and 3 for the agents. Their nomination is submitted to the Federal Council for approval; notice thereof shall be given to the competent authority of the canton in which they are domiciled.

For the approval of each subagent and for each modification in the personnel of the agency a fee, determined by the Federal Council, is to be paid.

The Federal Council has the right to withdraw the functions of a subagent if he give cause of well-founded complaints, and in this case he shall be immediately dismissed.

Business relations with emigrants can only take place through the intervention of agents or subagents.

ART. 6. Agents and subagents can not be officers or employés of the Confederation.

ART. 7. Agents are personally responsible to the authorities, as well as to the emigrants, for their proper conduct and for that of their subagents, as well as of their representatives in foreign countries.

ART. 8. The names of licensed agents and the representatives of recognized societies as well as their subagents are to be published in the "Feuille fedérale" immediately after having their names officially inscribed. No persons whose names are not published are authorized to make any publications relating to the shipment of emigrants.

ART. 9. Agents and subagents must keep a bound and paged register to enter emigration contracts as well as a bound and paged press copying book for their correspondence. The former are obliged to send to the Federal Council all the communications requested by it in regard to these contracts as well as to their relation with foreign maritime ship companies. The Federal Council, as well as the competent cantonal authority, is also entitled to examine

at any time the registers and all the books and accounts of the agents and subagents. Agents and subagents shall furnish to the police authorities all the information requested by them for the search of criminals.

ART. 10. Persons, societies, or agencies who are the representatives under any title of a colonization enterprise must inform the Federal Council, and furnish it with complete information of the same. The Federal Council is competent in each particular case to decide if, and under what conditions, permission can be granted to private persons, societies, or agencies to represent a colonization enterprise.

ART. 11. It is prohibited to agents to ship:

(1) Persons who, on account of advanced age, sickness, or infirmity, are unable to work, unless it be proven that sufficient support is assured to them at the place of destination.

(2) Minors or persons under guardianship without a written consent duly legalized from the paternal authority or guardian. Minors under sixteen years of age shall besides be accompanied by competent persons, and proof shall be furnished that their support is assured at their destination.

(3) Persons who, after having paid their passage, would arrive at the place of destination without means.

(4) Persons to whom the law of the country of destination prohibits entry.

(5) Persons not provided with papers establishing their origin and nationality.

(6) Swiss citizens liable to military service who have not proved the surrender to the canton of their military effects.

(7) Parents who, without consent of the competent authority, propose to leave their uneducated children in Switzerland. Before conclusion of the contract the proofs required in sections 2, 5, 6, and 7 of the present article shall be produced to the agencies.

ART. 12. It is prohibited to agencies as well as to colonization societies to conclude contracts according to which they engage themselves to ship a certain number of persons, be it to a transport society, to a colonization enterprise or other, or to a foreign government.

ART. 13. Contracts and undertakings of any nature containing provisions contrary to articles 11 and 12 are void and punishable.

ART. 14. Agents receiving money on deposit shall take care that the same be paid in cash on arrival of the emigrant at the place of destination without any deduction and in currency corresponding in value to that paid to the agent in Switzerland.

ART. 15. The obligations of the agent towards the emigrant comprehend in all cases:

(1) Sure expedition of persons and their baggage to the place of destination indicated in the contract at a determined price fixed in the contract, and which can not be augmented in no case and in any manner under reserve of sections 5 and 6 following. No separate charges can be demanded for the transport from the steamer to the final landing place.

(2) Sufficient, healthy, and clean nourishment and lodging during the whole journey, except in case the emigrant wishes to find his own support en route to the seaport.

(3) Free medical treatment in case of sickness.

(4) Conventional burial in case of death during the journey.

(5) Insurance of baggage against loss or damage according to a tariff indicated in the contract and submitted for approval to the Federal Council.

(6) Insurance in case of accident of the head of the family, or, in absence of any such, of the one so acting during the voyage to the place of destination designated in the contract, for the sum of 500 francs. The premium shall also be indicated in the contract and the tariff submitted to the Federal Council for approval.

(7) Complete maintenance (nourishment and lodging) in case of stopping or delay during the voyage when without fault of the emigrant, and in case the contracted means of transport should fail or be insufficient, then the prompt transportation by other means as favorable as those mentioned in the contract.

ART. 16. The following prescriptions shall be observed for the transportation of emigrants:

(1) The transportation by railway shall take place in passenger cars, and each person entitled to a seat, in conformity with the transport regulations. Admittance in ordinary waiting rooms shall be as far as possible accorded to emigrants at stations where there is a delay.

(2) The transportation on sea can only take place on steamers of the company designated in the contract. These steamers for the transportation of emigrants shall be provided with permanent subdivisions enabling the separation of the sexes, and there shall be a physician on board. They shall be subjected at the place of embarking to the control of the police.

(3) In no case the emigrant shall have to pay any fee whatsoever beyond the price fixed in the contract.

(4) The passage price can not consist in whole or in part in personal service.

(5) It is prohibited to the emigrant to supply himself with food during the sea voyage, and the same shall be furnished him in good quality and completely prepared.

(6) All emigration bodies across the sea, which are not accompanied by an agent or subagent, shall be received at intermediate stations or at port of embarking by a representative of the agency. The person accompanying the emigrants shall not leave them until the departure of the steamer. The agents shall see that the respective consuls are advised of the embarking and landing of emigrants and that the latter are received at the ports by a representative of the agency. If the agent does not comply with the prescriptions of articles 15 and 16 the emigrant is entitled to cancel the contract and sue the agent for damages.

ART. 17. Emigration contracts shall be made in writing and in duplicates, one for the emigrant and the other for the agent. The contract shall contain:

(1) Name and Christian name, date of birth, origin and domicile of emigrant, as well as the route of voyage and the place of destination to which the agent has obligated himself to ship the emigrant.

(2) The exact fixing of the departure, as well as in case of sea transport, the place and day of the departure of the vessel.

(3) The indication of the place on the vessel to which the emigrant is entitled and also for his family and baggage.

(4) The exact indication, in letters and ciphers, of the price of transportation and the insurance of persons and baggage. The price of an inland ticket shall be specially noted in the contract.

(5) The textual reproduction of articles 15, 16, 21, 22, and 23 of the present law.

(6) The provision that in case of proven sickness or other hinderance of not his fault the emigrant can not pursue his route or continue hisvoyage the agent is obliged to refund the sums paid for transportation less the expenses incurred by the conclusion or partial execution of the contract. The duplicate of the emigration contract in hands of the emigrant shall not be claimed from him under any pretext. The Federal Council issues an obligatory form for the drawing up of emigration contracts.

ART. 18. Agents infringing the present law, or their subagents or representatives in Switzerland or in foreign countries doing so, are liable to a fine of from 20 francs to 1,000 francs, enforced by the Federal Council without prejudice to action for damages which may be brought. If the circumstances are grave the license is withdrawn and the agents, subagents, or representatives found guilty are liable to imprisonment according to article 19, to be passed upon by the cantonal tribunals.

ART. 19. Persons and their accomplices who, without license or authorization, engage themselves with emigration operations, with the sale of passage tickets, participate in colonization enterprises, make publications prohibited by the Federal Council (article 24, section 1), may be cited by the bureau or on complaint of the cantonal tribunals punished with a fine of from 50 francs to 1,000 francs; if the circumstances are grave, with imprisonment of six months without prejudice to action for damages.

ART. 20. Persons selling passage tickets are subject to all the provisions of this law.

ART. 21. Civil action resulting from the non-execution of the provisions of this law shall be brought before the competent tribunal of the canton in which the contract was concluded

within one year from the date the injured party had knowledge of the damage. The judge shall inform the Federal Council of the beginning of the action as soon as taken (article 4, section 5). The competent cantonal authorities shall give notice to the Federal Council of the judgment rendered in virtue of articles 18, 19, and 21 of the law.

ART. 22. The Swiss consuls at seaports are charged with the examination free of cost of all reclamations which Swiss emigrants are claiming on the non-execution of their contracts, if presented within ninety-six hours after their arrival. With request of a party interested, a protocol of the reclamation shall be taken and a copy thereof sent to the Federal Council. The Federal Council is charged to adopt the necessary measures within the limit of the power it has that Swiss emigrants may receive assistance and advice at the principal ports of embarking and landing.

ART. 23. A protocol made in a foreign country according to the law by a Swiss consul, an emigration commissioner, or by any other competent person, shall merit full faith under reserve of contrary proofs.

ART. 24. The Federal Council enacts the necessary regulations for the execution of this law. It has the right to prohibit: Advertisements in public newspapers or other publications of any nature intended to mislead persons desiring to emigrate. The employment of transport conveyance not agreeing with the prescriptions of this law, or which would give cause to well-founded complaints.

ART. 25. The supervision of the Federal Council over emigration operations and the control of the execution of the present law shall be exercised by the department charged therewith by the Federal Council. For this purpose a special bureau will be attached to the department charged to keep up communication with the respective departments in other countries and to give, if requested, to persons wishing to emigrate, the necessary information, advice, and recommendations. The Federal Council can, within the limits of the budget, order special missions for the protection of emigrants and colonists.

ART. 26. The federal law concerning the operation of emigration agencies of December 24, 1880, as well as all the cantonal enactments of laws and ordinances contrary to this law, are repealed from the time of its going into effect. In particular, no canton can further claim of emigration agents or their subagents or emigrants a security or any tax whatsoever beyond the ordinary imports and duties.

ART. 27. The Federal Council is charged in conformity with the provision of the federal law of June 17, 1874, concerning the popular vote on federal laws and decrees, to publish this law and fix the time when it shall go into force. Also decreed by the Council of States.

BERNE, *March 20, 1888.*

The President: A. GAVARD.
The Secretary: SCHATZMANN.

Also decreed by the National Council.

BERNE, *March 22, 1888.*

The President: KURZ.
The Secretary: RINGIER.

The Federal Council decreed:

The foregoing federal law, published April 7, 1888, will go into force in virtue of article 89, of the federal constitution, and in execution on July 10, 1888.

BERNE, *July 10, 1888.*

In the name of the Swiss Federal Council.

For the President of the Confederation: SCHENK.
The Chancellor of the Confederation: RINGIER.

EXECUTIVE REGULATIONS TO THE FEDERAL LAW OF MARCH 22, 1888, CONCERNING THE OPERATIONS OF EMIGRATION AGENCIES.

The Swiss Federal Council, in execution of the federal law of March 22, 1888, concerning the operation of emigration agencies, on motion of the department of foreign affairs,

Resolved:

ARTICLE 1. The supervision of the Federal Council over the emigration agents and the control of the execution of the federal law concerning the operation of emigration agencies shall be exercised by the department of foreign affairs.

ART. 2. The cantons shall designate to the Federal Council those authorities, in conformity with article 1, section 1, of the law, which are to be charged with the supervision of the agents and subagents domiciled in their district.

ART. 3. License issued under the federal law of December 24, 1880, concerning the operation of emigration agencies is valid until August 31, 1888.

ART. 4. Persons who wish to engage in the professional transportation of emigrants or the sale of passage tickets must apply for a license to the department of foreign affairs. Under passage tickets or ship contracts is understood the right of a sea voyage from a European port of embarking to the transatlantic port of disembarking.

ART. 5. Societies wishing to exercise the business of emigration agents or the sale of passage tickets must submit, with the application for a license, their corporate contract or a certified copy thereof, and to indicate the name of their representative.

ART. 6. Applicant for license must prove:

(*a*) That he enjoys a good reputation and his civil and political rights.

(*b*) That he is acquained with the operation of emigration and is able to manage the safe transportation of emigrants.

(*c*) That he has a regular domicile in Switzerland. The department of foreign affairs can, in place of the proof asked in section B, subject the applicant to a personal examination. Persons demanding a license must declare that they are not in the employment or associated with any transatlantic company, maritime, or railway company. Emigration licenses not to be furnished to foreigners except under condition that the law of their original domicile does not prohibit to foreigners the right of immigration.

ART. 7. Those persons or societies who are engaged in the professional sale of passage tickets can continue their operation without license until August 31, 1888. But during this time they are subject to those provisions of the federal law of March 22, 1888, concerning the operation of emigration agencies which do not refer to the delivery of license. After September 1, 1888, no person or society can engage in the professional transportation of emigrants or the sale of passage tickets without having secured a license. If, through fault of the applicant, the demand for a license has not been granted before September 1, 1888, the right to pursue the business will be prohibited to him until he has received his license.

ART. 8. The department of foreign affairs will notify the cantons of license applications. The cantonal competent authorities must show that the conditions required by law for issuing a license have been complied with by the applicants and that the latter, if circumstances require, may be subjected to an examination.

ART. 9. The annual fee for license shall be 50 francs. This fee will be proportionately reduced if the license is not delivered at the beginning of the year. It is to be paid the first time on the receipt of the license and afterwards during the month of January.

ART. 10. The license gives to the agent the right to make their business of emigration throughout the entire territory of Switzerland, but the agents are obliged to bring to the knowledge of the department of foreign affairs their selected domicile and of each change thereof.

ART. 11. It is prohibited to agents and subagents to mislead emigrants or to solicit emigration by traveling through the country.

ART. 12. Persons or societies having received a license for the sale of passage tickets are prohibited to exercise any other function connected with emigration.

ART. 13. The Federal Council can withdraw the license:

(*a*) If the holder fails to comply with the conditions prescribed in article 6.

(*b*) If the same is guilty of grave and frequent violations of the prescriptions of the law.

(*c*) If the same participate in any enterprise of colonization which the Federal Council has denounced.

(*d*) If the security fixed in article 28 is not furnished within the prescribed time.

ART. 14. The agent wishing to surrender his license must make the declaration to the Federal Council and return his license.

SUBAGENTS.

ART. 15. Agents are permitted to be represented by subagents, whose nomination is confirmed by the Federal Council.

ART. 16. The agencies have to furnish to the department of foreign affairs exact data of the name, occupation, and domicile of the subagents whom they propose to employ. Subagents whose nominations are announced to the Federal Council, but not yet confirmed, can not enter upon their duties.

ART. 17. The confirmation of the nomination of a subagent will take place:

(*a*) When proof is furnished that he meets the same requirements as an agent (article 6).

(*b*) If the information requested from the cantonal authority, in conformity with article 1 of the law, is favorable.

ART. 18. Officers and employés of the Confederation can not themselves engage in emigration operations.

ART. 19. The confirmation of subagents will take place twice a year. In the interval the department of foreign affairs can approve, under reserve of the definite decision of the Federal Council, the nomination of a subagent. In this case the respective fee is to be paid by the provisional nominee.

ART. 20. It is prohibited to agents to employ for emigration operations persons whose nomination is not confirmed by the Federal Council. It is also prohibited to engage subagents of other firms, as well as emissaries

ART. 21. Subagents can not, without being authorized by the department of foreign affairs, engage in emigration operations in any other locality than the domicile indicated in the application.

ART. 22. The Federal Council can withdraw the confirmation of the nomination of a subagent:

(*a*) If he fails to comply with the legal provisions (article 6).

(*b*) If he gives cause to complaints submitted.

(*c*) If he engage in emigration operations on his own account.

(*d*) If be seeks to produce emigration by traveling through the country. In cases where the Federal Council finds it necessary to withdraw the authorization of the further employment of a subagent the same is immediately to be discharged. The department of foreign affairs will decide if a dismissed subagent can be re-employed, or if a subagent can be transferred from one agency to another.

ART. 23. The agents shall pay the following fees for the confirmation of the nomination of subagents and for the changes made:

(*a*) For the approval of the nomination of a subagent, re-employment of a dismissed subagent, or the transfer of a subagent from one agency to the other, for each case 30 francs.

(*b*) For publication of change of domicile, the dismissal or revocation of subagents, 5 francs. In case of death of a subagent no fee is to be paid for the publication. These fees, as well as the one prescribed in article 9, are to be paid, even if for any cause the renunciation of the license is made before the holder has opened his office, or, in event of the confirmation, a subagent does not enter upon his duties.

SECURITIES.

ART. 24. Persons or societies to whom the Federal Council has decided to grant a license for the conducting of an emigration agency shall furnish a security of 40,000 francs. The

security of persons or societies who engage only in the sale of passage tickets (article 4) shall be 20,000 francs. The agencies must furnish besides a security of 3,000 francs for each subagent whose nomination is approved.

ART. 25. The securities shall consist in federal or cantonal bonds (obligations), or in other valuable securities.

ART. 26. Before transmitting the security, a list of them, which the agent or the society wishes to deposit, shall be sent to the department of foreign affairs, which, after advice from the federal department of finance, will decide on their acceptance and value.

ART. 27. The securities shall be deposited with the federal treasury, through the federal department of foreign affairs. The security shall be subjected to the provisions of the pawn contract (article 210 and following of the obligation code).

ART. 28. A delay of fourteen days is accorded to the agent from date of delivery of license or from the approval of the nomination of a subagent. The department of foreign affairs can exceptionally grant a delay of one month.

ART. 29. The security serves as a guaranty for reclamations by authorities or emigrants, or their assigns, which could be brought according to law. If the value of the security deposited should diminish from any cause whatsoever the depositor must immediately make it good.

ART. 30. The costs resulting from keeping the securities, the delivery of the coupons, change, transmission of documents, etc., are to be charged against the depositor. The maturing coupons of the deposited securities are to be delivered in advance, at the end of the year for the following year, to the depositor. Measures to be taken in case of drawings, of declarations of conversion, expiration of loans and the payment of interests are left to charge of the person furnishing the security. In such cases the delivery of the whole or part of the security will only take place when the agent has deposited the equivalent of the value surrendered.

ART. 31. For employés who are exclusively occupied in the office of the principal agency (as correspondents, cashiers, book-keepers, and servants) no security or fee has to be furnished. These employés, if they are not at the same time subagents, have not the right to sign emigration contracts; if they exercise other functions it will be in contravention of article 5, last section of the law, and accordingly punished.

ART. 32. The security of 40,000 or of 20,000 francs can not be returned before one year after the annulling of the license. If at that time reclamations exist against the agent a corresponding amount will be retained until the same is adjusted. The department of foreign affairs will publish, in the Feuille Fédérale and Feuille Officielle du Commerce, the time during which claims against the security can be presented.

ART. 33. The reimbursement of security, to be furnished according to the number of subagents, will take place one year after the dismissal of a subagent.

GENERAL AND FINAL PROVISIONS.

ART. 34. The department of foreign affairs, as well as the cantonal officers charged with supervision of emigration operations, article 2, shall keep an exact and continuous register in which are inscribed the names of the licensed agents, the representatives of recognized societies, persons authorized to sell passage tickets, and their subagents. These names shall be published in the Feuille Fédérale immediately after delivery of the license or the approval of the subagents. In annual tables the list of persons authorized to transport emigrants will be published.

ART. 35. The cantons shall distribute in a sufficient manner these publications to their police authorities, who are charged with seeing that persons not inscribed in the agents' lists make no publications referring to the transportation of emigrants, that no advertisements in public newspapers or other publications are made (prospectus handbills, etc.) of a nature to mislead persons desiring to emigrate. In case where the author can not be discovered the proprietor of the newspaper, or eventually the printer, shall be responsible for illicit publication of this kind.

ART. 36. The agents are personally responsible to the authorities as well as to emigrants for their own management and of their subagents, as well as of their representatives in foreign countries.

ART. 37. Agents and subagents shall keep a bound and paged register, according to a form prescribed by the department of foreign affairs, of the emigration contracts they make. The press copying books used for their correspondence shall also be bound and paged.

ART. 38. The department of foreign affairs may subject, from time to time, to an inspection the registers, books, and other records of the agents and subagents. The agents and subagents shall freely permit the officers of federal bureau of emigration, as well as the cantonal authorities, to inspect their registers, books, and records.

ART. 39. The agents shall communicate to the department of foreign affairs:

(1) The list of persons transported by them—the forms for this list are furnished free of charge to the agents, and are to be sent monthly duly filled out.

(2) A price-list of all the routes by which emigrants are shipped, separately designating sea journey to the landing port and the tickets for the interior.

(3) The names of their representatives and attorneys at the port of embarking and landing.

(4) The tariff according to which, in execution of article 15, sections 5 and 6 of the law, the insurance of the baggage of the emigrant and of the chief of the family or its representative is regulated.

(5) A list of the amount of money which is delivered to the agent and which, according to article 14 of the law, is to be paid to the emigrant at the place of destination.

This list shall contain:

(*a*) The sum turned over in Swiss value.

(*b*) The sum turned over in value of place of destination.

(*c*) The exact designation of the emigrant.

(*d*) The exact designation of the person or bureau which has to make the payment.

The Federal Council can prohibit to agents the sale of inland tickets.

ART. 40. The agents shall give notice in due time to the Swiss consuls at the ports of embarking and landing of the arrival of emigrants and provide that the latter will be received by a representative of the agency there.

ART. 41. The department of foreign affairs is charged with the execution of this law.—BERNE, *July 10, 1888.*

In the name of the Swiss Federal Council, for the President of the Confederation,

SCHENK.

The Chancellor of the Confederation,

RINGIER.

CABLE CONCESSION IN HAWAII.

AN ACT TO AUTHORIZE THE HAWAIIAN GOVERNMENT TO CONTRACT FOR THE CONSTRUCTION OF INTER-ISLAND SUBMARINE ELECTRIC TELEGRAPH CABLES.

Be it enacted by the King and the Legislature of the Hawaiian Kingdom:

SECTION 1. The minister of the interior, with the unanimous concurrence of the cabinet, is hereby authorized to enter into a contract with J. Sherman Bartholomew, residing in Honolulu, Hawaiian Islands, his associates and assigns, or with any other persons or corporation, for the construction, laying, or maintaining of a submarine electric telegraph cable or cables to connect the islands of the Hawaiian group from Hawaii to Kauai, as follows, to wit: From Hawaii to Maui; from Maui to Oahu, with a landing on Molokai, and from Oahu to Kauai, together with lines of land telegraph to connect the same with all or any points on the Hawaiian Islands.

SEC. 2. Such contract may, by its terms, provide for the grant, concession, and confirmation by the Hawaiian Government to the said J. Sherman Bartholomew, his associates and assigns, or any other persons or corporation (hereinafter named and referred to as the constructors), of the sole and exclusive right and privilege to construct and lay submarine electric telegraph cables to connect the islands of the Hawaiian group from Hawaii to Kauai, by way of Maui, Molokai, and Oahu, together with lines of land telegraph, to connect the same for and during a period not to exceed ten years from the 1st day of January, A. D. 1889: Provided, however, that if the same lines of submarine electric telegraph cable shall not be laid ready for use on or before the 1st day of July, 1889, then the exclusive right and privilege, the granting of which is hereinbefore authorized, shall, at the option of the cabinet, at once or at any time thereafter, lapse and become void upon three months' notice to that effect being given to the constructors; and provided, also, that if any of the lines of land telegraph, to connect with the said submarine cables, shall not be constructed and ready for operation on or before the 1st day of January, A. D, 1891, then or at any time thereafter, upon three months' notice to the constructors, the minister of the interior, with the approval of the cabinet, may declare the exclusive right and privilege granted for the construction and maintaining of any such land line to be void and forfeited, and such exclusive right and privilege shall thereupon be void; and provided, also, that the rights and privileges granted by virtue of this act shall not operate to prevent or preclude the Hawaiian Government from consenting to the landing, laying, or maintaining upon the Hawaiian Islands, or any of said islands, or in any Hawaiian waters, of any submarine telegraph or other electric cable or cables which shall serve to connect the said islands, or any of them, with any foreign country, or to interfere with the vested rights of any existing Hawaiian telephone or telegraph corporation.

SEC. 3. Such contract may further provide for the payment by the Hawaiian Government to the said constructors of the sum of $25,000 in the manner following, that is to say: Upon the completion of the said line in good working condition between Oahu and Maui, the sum of $8,000; upon the completion of the said line in good working condition between Oahu and Hawaii, $8,000, and upon the completion of the said line in good working condition between Oahu and Kauai, $9,000.

SEC. 4. The granting of any of the rights or privileges, and the payment of any of the money authorized by this act, shall be conditioned upon the following additional covenants, that is to say: All messages other than Hawaiian Government messages or press messages shall be received and transmitted over any or all of said lines at the rate of not more than 10 cents for each word, and all messages to or from the Hawaiian Government, or any officer thereof in his official capacity, and all press messages shall be received and transmitted over said lines for one-half of the rates charged for messages other than the Hawaiian Government messages or press messages.

SEC. 5. Upon proof satisfactory to the minister of the interior that the respective sections of said line, as set forth in section 3 of this act, have been completed and are in good working condition for the transmission of messages, the said minister is hereby authorized and directed to pay to the said constructors the respective sums of money as provided in said section 3.

SEC. 6. This act shall take effect from and after the date of its approval.

Approved this 2d day of July, 1888.

KALAKAUA REX.

By the King:

L. A. THURSTON,

Minister of the Interior.

PORT AND BAY OF BAHIA BLANCA.

Within the last few years the attention of the public has been very generally directed to the growing importance of the port of Bahia Blanca, or White Bay, which is located on the Atlantic coast in the extreme southeastern corner of the province of Buenos Ayres. Very great things are predicted of its future. The newspapers already have named it the "future Liverpool" of the Argentine Republic. The principal reason for these predictions is the fact that it is the only natural harbor on the entire Argentine coast, north of Patagonia, where sea-going vessels can at all times ride at anchor beyond the reach of the storms, which at some seasons of the year are so prevalent along the southern Atlantic; at the same time that the bay has always sufficient water for the largest class of vessels, with excellent holding ground throughout its whole extent.

HISTORY OF BAHIA BLANCA.

The town of Bahia Blanca is about 6 miles back from the port, the intervening distance being low and swampy. Its history dates back to 1826, at which time a fort was established there to protect the frontier from the ravages of the Indians. In 1833, under the auspices of the Dictator Rosas, the town was laid out, various houses were built, and a regular mail service by diligence was established with Buenos Ayres. For a few years there was quite an influx of settlers, not only to the town but to the adjacent country. Soon a number of *estancias* were started, and all that corner of the province, with its rich grasses, was quite covered with cattle and horses. But with the fall of Rosas, in 1852, the fort was quite abandoned, and the Indians again coming in, spread ruin and desolution by burning the *ranchos*, killing the settlers, carrying off their stock, and even committing their depredations in the very center of the town, so that the neighborhood was again occupied by ostriches and guanacos. No effort was made to re-establish the *estancias* until 1863, when the Indians having been driven from all that vicinity, some fine establishments were built along the valley of the Napostá River, well stocked with cattle and horses. About the same time a number of large sheep *estancias* were started. Among others who settled there was Captain Arnold, an old ship-master from the United States, who, in 1865, secured lands and stocked them with sheep.

The town has grown in importance since the Buenos Ayres and Great Southern Railway was (in 1884) extended to the town and port. In 1885 an extensive mole and port works, under a concession from the province, was completed by the railway company and opened to the public. The port has now all the modern appliances for handling cargoes, with a railway track running along the entire length of the mole.

PRESENT CONDITION OF THE TOWN AND COUNTY.

The *partido* (county) of Bahia Blanca contains about 228 square leagues. The town itself has an extent of about 160 acres, adjoining which are small farms for crops, orchards, vineyards, etc., embracing together about 1,000 acres, while about 1,233,870 acres are devoted to cattle *estancias* and sheep runs. The total population of the county is 3,200, of which 2,213 are natives and 988 foreigners. In 1886 it contained 45,955 horned cattle, 17,645 horses, 309,238 sheep, 852 hogs, 343 goats, and 323 ostriches. It has 40 industrial establishments, employing 130 persons, with an invested capital of $182,000; and 55 commercial houses, employing 138 persons, with an invested capital of $400,000. Its other assessments are as follows: Lands, $1,985,152; buildings, $565,000; vines and orchards, $31,090; agricultural implements, $1,064; cattle, sheep, and horses, $1,637,012, etc. The total assessed wealth amounts to $4,458,723. The town itself contains 639 houses, 1 church, 2 schools, 1 newspaper, 1 public library, 1 bank (a branch of the Provincial), 2 steam mills, 7 hotels, 94 shops, etc.

So many fresh-water streams flow from the Sierras Ventana, a chain of high hills in the northern part of the *partido*, that the country is nearly always well watered. Although it is plain or pampa along the banks of the rivers Sauce Grande, Sauce Chico, and Neportá there is considerable timber, chiefly the red willow. The climate is mild, and snow seldom falls. According to the observations taken at Bahia Blanca for the last twenty years, the following are the meteorological figures:

Temperature (Fahrenheit).	Spring.	Summer.	Autumn.	Winter.
Mean	60°	74°	60°	48°
Maximum	95°	101°	93°	73°
Minimum	32°	46°	46°	26°

The rainfall averages 6 inches in spring, 5 inches in summer, 6 inches in autumn, and 3 inches in winter, total for the year 20 inches.

THE BAY OF BAHIA BLANCA.

The bay or estuary of Bahia Blanca, for the purposes of navigation and commerce, is very advantageously situated. It is located in 38° 44′ south latitude, and is 3° 50′ west of the longitude of Buenos Ayres. It is 36 miles in length and is 15 miles wide at its entrance, which is divided into three great channels, with sufficient depth of water for vessels of the largest size and greatest draught. Throughout its great extent there is everywhere splendid anchorage, the depth varying from 12 to 60 feet at low water. The channels, however, which lead up to the port are in some parts tortuous and full of bars, and hence, until recently, have been dangerous to navigation in the absence of lights and buoys. In 1881, however, the Argentine Government established a ponton light off Point Hermosa and issued an official notice of its position to navigators,* but subsequently the light was placed

* Reported in No. 14 of CONSULAR REPORTS, pages 784 and 785.

directly on Point Hermosa. It stands 168 feet above the sea-level and displays a white light. It is visible for a distance of 10 miles at night and 15 miles during the day, thus giving every facility for approaching safely the entrance of the bay.

NAVIGATION STATISTICS.

The completion of the Buenos Ayres and Great Southern Railway to Bahia Blanca, a distance of 444 miles, has reduced the time between the two places to eighteen hours, and the business of Bahia Blanca has been greatly increased. But besides this there is now regular steamer communication between the two places, the passage being made in about thirty-six hours.

The arrivals and departures of vessels in this coasting trade during the year 1887 were as follows, viz, 30 arrivals of steamers with a tonnage of 9,047 tons; 39 departures with a tonnage of 13,643 tons; arrivals of sailing vessels, 12; tonnage, 2,478; departure of sailing vessels, 20; tonnage, 4,354. In the foreign trade there were 17 arrivals with 7,157 tonnage, and 10 departures with 4,205 tonnage. The nationality of the vessels arriving was as follows: 8 British, 4 German, 2 Italian, 1 American, 1 Norwegian, and 1 Danish; and of these 5 carried cargoes of coal for the railway company, 4 carried cargoes of lumber from Brunswick, Pensacola, Portland, Punta Averas, and the rest general cargoes.

FOREIGN COMMERCE.

The foreign commerce of Bahia Blanca for the last five years was as follows:

Year.	Imports.	Exports.	Total.
1882	336,028	2,652	368,680
1883	746,502	4,137	750,639
1884	299,876	379,615	679,491
1885	548,292	670,525	1,218,817
1886	274,849	801,230	1,076,079

As explaining the apparent decrease in imports, I may add that since the opening of the railway from Buenos Ayres a very large proportion of the supplies have been shipped by way of this port.

THE FUTURE PROSPECTS OF THE PORT, ETC.

In regard to the future prospects of Bahia Blanca, as I have already stated, the most sanguine expectations are entertained, these expectations being based on the fact that it is the only harbor in the Argentine Republic, and that "it is the natural outlet," as Dr. La Fuente, in charge of the last census, states, "of the exports of one-half of the Republic, as well as the most convenient port for the reception of foreign imports." He adds that "Bahia Blanca may be considered as the key to no less than 20,000 square

leagues of country, extending to the west and southwest of Mendoza, and to all that vast area comprehended between the Rio Negro and Colorado rivers, it requiring only a little effort for the province of Buenos Ayres to build here a maritime city of the first importance." In reference to the bay itself, I further translate from the same authority as follows:

In an economic and strategic point of view this great estuary has, throughout its whole extent, as well as that of the rivers running into it, a very grand future for the construction of docks, dykes, landings, and deposits for coal, and for the interchange of merchandise. The interior of the bay is sufficiently large for the maneuvers of a squadron, and would serve better than any other point for the base of the naval power of the nation. The soft bottoms of the rivers, and the great difference of level beween high and low tide, admirably adapt the place for careening and cleaning the hulks of vessels, the entire estuary, from its entrance to the mouths of the Neportá and Sauce Corte rivers, having most excellent anchorage and holdings for vessels of any size.

Real estate in the town of Bahia Blanca ranges from 12 cents per square meter for outlying lands to $12 in gold per square meter for lots in central positions. Outside or "camp" properties vary in value according to quality of land, proximity to the railway, depth at which wells have to be sunk to find water, etc. It may be stated, however, that the price ranges from $8,000 to $25,000 in gold per square league. Except in the near vicinity, the back country is as yet but little known, but as it nears the Cordilleras the land is said to improve greatly in its agricultural and pastoral possibilities. It is very doubtful if these lands will ever carry the quantity of stock usually placed on more northern camps, but the climate and grasses appear to be unusually favorable to sheep.

At the last session of the National Congress a concession was granted for a railway from Bahia Blanca to Villa Mercedes, in the province of San Luis, where it will connect with the Pacific and other roads leading to the north. The line is now in course of being surveyed, and the work of construction is expected to commence in the Spring, *i. e.*, September next. The extension of the Buenos Ayres and Great Southern Railway, from Tres Arroyas to Bahia Blanca, is also under survey, thus giving a new line running nearer to the Atlantic coast. Another road from Bahia Blanca to Carmen de Patagones is also projected, but it has not yet taken any substantial form.

Thus it will be seen, if Bahia Blanca does not become at once all that is anticipated of it, that at least it has a very promising future before it, and must ultimately be no inconsiderable port.—BUENOS AYRES, *June 27, 1888.*

E. L. BAKER,
Consul.

AGRICULTURE IN EGYPT.

Egyptian modes of agriculture are to-day exactly similar to those of from three to five thousand years ago. Nature produced a singular country, wherein have dwelt from the prehistoric time a singular people, the one and the other seemingly absolutely dependent upon that and those which have been and which must be. The Nile is not more unalterable in its course

and in its floods than the agencies of production and reproduction in a land nourished by it since terrestrial symmetry was evolved. For thousands of years before Moses promised his followers a land drinking "water of Heaven," where the Israelitish cultivator would be spared the toil, as in Egypt, of watering his seed with his foot, have the methods of cultivating the soil been unchanged. Ancient Egyptians even surpassed modern Egyptians in agriculture. The country produced more, and there was greater public and private wealth than now. More land was in cultivation under the Pharaohs than under the Pashas; the broad and extended sea-coast was not a marshy waste; Lake Moeris was in existence; there were more canals, more irrigation, more cultivated fields, greater harvests, and greater independence. Egypt was rich and powerful, the Kingdom of great conquerors, the nourisher of powerful and invincible armies. Then she laid other countries under contribution; impressed hundreds of thousands of captive foreigners to accomplish the greatest works of human creation; had millions of treasure in store and grain for a famishing world. Now the superficial area under cultivation is far less than it used to be. There is not so much irrigation and not as bountiful production; there is public and private poverty; the magnificence of a nation has departed; Egypt produces no conquerors, but has become the home of the conquered. Yet, in this wretched condition, with her people taxed as they never have been before, simply to gratify foreign greed, Egyptians live; and, besides obtaining a sustenance, such as it is, in 1887 they exported a production valued at nearly $55,000,000, without discussing the foreign pressure, which makes Egyptians deny themselves every human comfort.

In 1887 it is estimated there were in cultivation in Egypt 4,961,462 feddans,* but the crops cultivated for the same year covered 6,134,364 feddans. This is owing to what is known as intensive farming, causing the same soils to produce more than one crop in one year. There are three seasons of crop production in Egypt—chitwi, the winter season; sefi, summer; nili, autumn, or season of the Nile inundation. Therefore, in consequence of these different seasons of vegetation in one year, we find the entire cultivable soil of the country subjected in the Delta, or Lower Egypt, to the production of four crops in three years; and in the Nile Valley, or Upper Egypt, to seven productions in six years. In certain localities, where the soils are of superior quality and the conditions of irrigation most favorable, the proportions above indicated are surpassed.

Analysis of crops shows that wheat is comparatively more largely produced in Upper than in Lower Egypt, while bersim is nearly twice as extensively cultivated in the Delta. There are now over 930,000 feddans cultivated in Lower Egypt in cotton, and very nearly 110,000 in Upper Egypt. Beans are comparatively nearly twice as extensively cultivated in Upper Egypt as in the Delta, while Indian corn is mainly produced in the atter, the reverse being the case with doura. Barley is about evenly culti-

*One feddan is 1.20 acres.

vated in both sections, while rice is almost wholly produced in the Delta and near the sea coast. Twelve-thirteenths of the sugar-cane is produced in Upper Egypt. Lupines, tobacco, and peas are cultivated most extensively in Upper Egypt.

Below is presented a table of comparative cultivation for the year 1887:

Articles.	Ratio of total cultivation.	Feddans cultivated.
	Per cent.	
Wheat	20.25	1,241,100
Bersim (*Alexandrium trifolium*)	15.20	941,222
Cotton	14.13	865,526
Beans	12.34	755,868
Indian corn	11.15	683,825
Barley	8.50	520,351
Doura	7.20	441,295
Lentils	2.45	150,117
Rice	2.45	149,717
Fenugreek	2.15	130,674
Kitchen truck, onions, vegetables	1.30	79,069
Sugar-cane	1.16	71,203
Vetches	0.52	31,536
Melons, water-melons, cucumbers	0.35	20,764
Lupines, habba soda	0.22	13,376
Tobacco	0.20	11,657
Gray peas, kidney beans, etc	0.18	10,951
Flax	0.11	6,376
Sesamum, castor-oil plant	0.07	4,958
Henna	0.03	1,694
.....	0.02	1,316
.....	0.02	1,210
Indigo	.....	281
Poppies	.....	276
Vineyards and orchards	.....	(8,746)
Total	100.00	6,134,364

The culture, by seasons, is as follows:

Seasons.	Egypt entire.		Lower Egypt.		Upper Egypt.	
	Surface for culture, 4,961,462 feddans.	Ratio of superficial culture.	Surface for culture, 2,743,990 feddans.	Ratio of superficial culture.	Surface for culture, 2,217,472 feddans.	Ratio of superficial culture.
	Feddans.	*Per cent.*	*Feddans.*	*Per cent.*	*Feddans.*	*Per cent.*
Chitwi	3,954,466	79.70	1,948,690	71.02	2,005,776	90.45
Sefi	1,301,225	26.22	1,017,557	37.09	283,668	12.79
Nili	878,673	17.70	601,049	21.90	277,624	12.52
Total	6,134,364	123.62	3,567,296	130.01	2,567,068	115.76

It will be seen from the above that intensified cultivation is practiced in the Delta more than in Upper Egypt. The reason of this is, that facilities for irrigation in Lower Egypt are far more amplified than in the upper region. Besides, a great inundation of the Nile, such as that of 1887, covers nearly

all the cultivatable land in Upper Egypt, preventing for a season the cultivation of crops, which, during the season of nili, are successfully grown, in consequence of protection against the flood in the Delta. There was widespread destruction of the growing Indian corn and doura in Upper Egypt, because of the great altitude of the waters during September and October, 1887.

From data before me I have prepared a very interesting table showing the relation between agriculture and population, enlarging it by provinces as well as by sections. Cultivation, as presented therein, embraces the three seasons, chitwi, sefi, and nili. This table is presented as follows:

Upper Egypt.

Provinces.	Surface cultivated.	Surface of soils cultivated.	Agricultural populations.*	Non-agricultural populations.	Total populations.
	Feddans.	*Feddans.*			
Assiut	442,175	419,100	360,068	191,119	551,187
Beni Senef	273,700	231,610	165,496	48,737	214,163
Fayoum	372,751	331,045	144,834	74,070	218,904
Geezeh	211,668	181,176	182,689	99,784	282,473
Minieh	444,323	397,240	229,793	76,229	306,022
Esneh	160,396	150,459	185,645	49,025	234,670
Guirgeh	356,829	325,915	353,438	163,196	516,634
Keneh	305,244	280,927	295,794	104,109	399,903
Total	2,567,068	2,217,472	1,917,687	806,269	2,723,956

Lower Egypt.

Provinces.	Surface cultivated.	Surface of soils cultivated.	Agricultural populations.*	Non-agricultural populations.	Total populations.
	Feddans.	*Feddans.*			
Behersh	553,507	467,662	264,297	114,362	378,659
Charkieh	566,938	434,982	320,443	138,253	458,696
Darkalieh	608,515	462,367	399,555	188,097	587,652
Garbieh	1,052,409	840,089	653,800	280,037	933,837
Kalioubieh	243,214	187,180	178,428	82,564	260,992
Menoufieh	542,713	351,710	465,461	180,284	645,745
Totals	3,567,296	2,743,990	2,281,984	983,597	3,265,581

* Not inclusive of oases and Government posts.

FRUITS AND VINES.

While the cultivation of fruits and vines does not constitute one of the most important agricultural industries of Egypt, it is interesting to consider it. In Lower Egypt are produced oranges and lemons of all varieties. Peaches and pomegranates are also produced, and near Alexandria figs and grapes. Dates are not largely grown in the Delta, except in the provinces of Charkieh and Gharbieh, where there are some very good plantations. In Upper Egypt fruit production is largest. In the Fayoum it is the most diversified as well as most extensive. There grow in perfection figs, pome-

granates, apples, pears, grapes, apricots, plums, and olives. About Cairo, too, are grown with much perfection all the fruits named, as well as quantities of bananas. Olives are grown, besides in the Fayoum, in the province of Minieh and about Cairo. Grapes are produced in nearly every province, but the most important vineyards are found in the Fayoum, where their product is of a most superior quality.

Of fruit trees the date is the most important in number, superficial area, and production. In the Delta and valley of the Nile there are, from the seaboard to Assonau, over 5,000,000 date trees, 3,500,000 of which bear seed and fruit. In the oasis there are about 300,000. Charkieh and Sharbieh, in Lower Egypt, and Guirgeh, Guirzeh, and Assiut, in Upper Egypt, are the provinces in which they are mainly grown. Altogether they occupy a superficial area of 40,000 feddans. Of oranges, lemons, citrons, pomegranates, figs, peaches, apples, etc., there are said to be over 1,500,000 trees, occupying a superficial area of about 9,000 feddans. Outside of this estimate there exists a great variety of edible fruits, such as bananas, barbarian figs, medlars, mangoes, plums, apricots, mulberries, etc., of which it is impossible to make even an approximate estimate as to number.

CATTLE AND FARM ANIMALS.

I have obtained thoroughly reliable estimates of the number of various sorts of animals directly employed in agriculture, and these estimates do not embrace those not sufficiently matured to be productive; nor do they embrace those belonging to Bedouins.

In the provinces of Lower Egypt there are thus employed 129,000 oxen, 163,000 buffaloes, 28,000 camels, 14,000 horses, 3,500 mules, 114,700 asses, and 388,600 sheep and goats. In Upper Egypt there are 81,000 oxen, 88,000 buffaloes, 26,750 camels, 6,850 horses, 400 mules, 55,000 asses, and 569,000 sheep and goats.

In 1884 there was a most terrible epidemic of bovine typhus, resulting in enormous losses to agriculture. Since then there has been no grave epidemic malady among cattle and increase has been steady. The African buffalo was found to be less subject to disease than the ox, and the result has been that, proportionately, the former is more in use now as a farm-work animal than formerly. Besides being very hardy and more easily kept than the ox, the buffalo is a huge animal, of great power and endurance. Farm-yard poultry consists of chickens, turkeys, geese, ducks, pintados, etc. The stock of all varieties used in production is placed at 6,000,000 head. Pigeons are reared in great numbers, the stock for breeding purposes being placed at 10,000,000. Besides being reared for food pigeons are very highly prized as producers of guano.

Bees are not generally profitable. They flourish best in the lower portion of Upper Egypt and in the upper portion of Lower Egypt. Production of honey and wax is not very conisderable, and it is impossible to procure an estimate of it.

Hogs are reared in small numbers. A mussulman never eats pork, and, of course, he would violate his faith by rearing the abominable hog. The animal is reared in small numbers in Coptic communities, and the breed of swine in use, I am satisfied, has been deteriorating since the devil possessed a certain herd in this part of the globe; and the man who eats such pork as is produced in a climate such as this is certainly not as good as a hog. One who contemplates the eastern hog comprehends the fitness of things which brought about the Jewish declaration that the beast is an unclean thing.

Milk diet among Egyptian agriculturists is a prime necessity, and yet no data exists from which any figures concerning the product may be presented. Both the common cow of Egypt, which belongs to a breed thousands of years old and of purest strain and great intrinsic merit, and the buffalo contribute to it. Great quantities of butter (the milk of both the cow and the buffalo being very rich in oil) are produced. The Egyptian cow greatly resembles the thoroughbred Jersey in form and in colors. Generally the former is not so clean in the neck as the latter, but the form is just as beautiful, the horns more crumpled, and the milk-flow as great and as rich as that of the beautiful pet of so many American dairymen. I feel convinced that the Jersey is the transplanted progeny of even the godly breed of Apis—inscriptions of the tombs and temples, I am satisfied, prove it beyond a doubt.

PRODUCTION OF COTTON.

The cultivation of cotton as a staple agricultural product of Egypt began in 1821. That year the lint product was 944 cantars.* In 1822 the crop amounted to 35,108 cantars, and in 1823 to 159,426. From then until 1849 the annual yield ranged, except when calamity befel the growing crop, from the neighborhood of the last-named figures to over 300,000 cantars. In 1850 impetus was given to production, and the crop reached 364,816 cantars, and from then until 1861 it ranged from about 500,000 to 600,000 cantars. In 1861 the crop was 596,200 cantars, and the average price was 280 piasters, equal to about 13 cents a pound. In 1862 the war in the United States had begun and production for that year reached 721,052 cantars, and prices an average of 460 piasters, or over 22 cents a pound. In 1863 the production was 1,181,888 cantars, and the average price of the cantar 725 piasters, equivalent to 35 cents a pound. In the following year the one was 1,718,791 cantars and the other 900 piasters, equal to over 44 cents a pound. In 1865 production was 2,001,169 cantars, and the price 635 piasters. For 1860 production fell to 1,288,762 cantars, and the average price to 705 piasters From 1867 to 1879 production ranged from 1,250,000 to 2,500,000 cantars, while prices descended from 450 to 250 piasters per cantar. The following tables presents production and average prices since 1880:

* The cantar equals 98.09 English pounds.

Year.	Average price in piasters per cantar.	Cantars.
1880	281	3,123,515
1881	287	2,792,184
1882	275	2,846,237
1883	300	2,293,537
1884	270	2,686,382
1885	251	3,591,486
1886	228	2,904,842
1887	240	3,025,965

NOTE.—One piaster equals 4.9641 cents.

SUGAR.

Ismail Pasha, Khedive of Egypt, now in exile, inaugurated the production of sugar on a considerable scale in Egypt. He acquired large estates for the purpose, and had erected a number of very large and complete sugar mills—they are all in Upper Egypt. When Ismail was sent from Egypt and the Khediviate descended to his son Tewfik, the great estates which had been acquired by the former were declared the property of the state, and since then their management has been intrusted to a public administration known as the "Daïra Sanieh." The lands were made the basis of a loan, and then they passed under foreign direction, the chief of the commissioners, a figure-head merely, being now the only native on the commission. With the finest lands in Egypt, leased for a term of two years at £ E. 10 per feddan ($50), the Daïra Sanieh loses enormously every year, the losses for the last three years ranging from £ E. 250,000 to £ E. 400,000. Formerly these lands were not a tax to the state. Two-thirds of all the sugar-cane grown in Egypt is produced upon the Daïra Sanieh lands. The lands are leased to fellahs, who are required to plant a certain proportion in sugar cane. The cane is taken for the mills at a price fixed by the administration, in the fixing of which the leases have nothing to do. All the mills remain under the direction of the administration, and in them are made all the sugar, molasses, and alcohol produced in Egypt. The aggregate values of the three products for the three years were, 1885, £ E. 599,287; 1886, £ E. 613,283; 1887, £ E. 373,859. In 1877 and 1878 the values were, respectively, £ E. 889,953 and £ E. 816,214. Then there was no foreign direction, except by experts engaged in the manufacture.

The sugar-cane produced on other than Daïra Sanieh lands is sold to the Government mills at prices fixed, as stated above, by the administration, and is by them converted into the marketable products. The sugar produced in 1887 amounted to 1,090,424 cantars, sold for £ E. 551,153; molasses, 241,899 cantars, sold for £ E. 15,896; alcohol, 302,239 cantars, sold for £ E. 6,810.

NOTE.—£ E. 1 equals 100 piasters = $4.9641.

The losses to the state on account of the Daïra Sanieh administration is the result of excessive employment in both the executive and working departments. There is that wasteful extravagance visible in everything which universally attaches to all administration at this time in Egypt. Direction absorbs wealth, while the directed increase annually in poverty.—CAIRO, EGYPT, *July 11, 1888.*

JOHN CARDWELL,
Agent and Consul-General.

FOREIGN TRADE OF CHINA FOR 1887.

The total value of the foreign trade was 188,123,877 Haikwan taels, as against 164,685,891 taels for 1886. These figures do not include the value of goods carried coastwise nor goods carried in Chinese junks which are not under the control of the maritime customs.

CUSTOMS REVENUE.

The customs revenue for 1887 was 20,541,399 Haikwan taels, being an increase of 5,396,711 taels. Of this increase, opium lekin accounts for 4,645,842 taels.

EXPORTS.

The total value of the exports for 1887 was 85,860,208 taels, as against 77,206,568 taels in 1886, an increase of 8,653,640 taels.

In spite of the universal wail that went up over the depreciation of tea, the total quantity exported was 2,096,097 piculs in 1887, against 2,217,295 piculs in 1886. In quantity 5 per cent., 120,000 piculs less, left China in 1887 than in 1886. But the assessed value of the export in 1886 was 33,504,820 taels, and in 1887, 29,379,838 taels. "It is, therefore," says the statistical secretary of the customs, "to the depreciation in value with its likely effect in bringing about a diminished production in years to come that we must attribute the apprehension entertained for the prosperity of this vast industry."

The total quantity of white raw silk exported was 59,589 piculs. In this quantity 2,780 piculs is included which was exported in junks through the Kowloon and Lappa customs. Deducting this there remain 56,809 piculs, valued at 17,461,367 taels, a quantity almost identical with the export of 1886, but the value is 5 per cent. higher. The same remark applies to other classes of unmanufactured silks.

Of brown sugar there was exported 458,268.85 piculs in 1886, against 634,179.12 piculs in 1887, an increase of 175,910.27 piculs.

Of white sugar there was exported in 1886 128,828.14 piculs, against 113,475.42 piculs in 1887. Of sugar candy there was exported 25,392.97 piculs in 1886, against 19,288.96 piculs in 1887. Sugar has, therefore, in the main, recovered from the decline of last year.

Next to tea and silk comes straw braid as an article of export. The growth of this trade has been rapid. The exports were as follows: 1883, 58,627 piculs; 1884, 78,168 piculs; 1885, 76,494 piculs; 1886, 82,413 piculs; 1887, 150,952 piculs. The value in 1887 was 3,738,310 taels.

The principal original places of export are Tien-Tsin and Chefoo, the largest exportation being from Tien-Tsin. Great complaints have been made by foreign merchants of the bad condition in which this article has been brought to market, but the trade has nevertheless steadily increased.

IMPORTS.

The total value of the imports of foreign goods was 102,263,669 taels, against 87,479,323 taels in 1886, an increase of 14,784,346 taels.

Last year imports show an increase of 6,562.25 piculs in opium, an increase of 7,933,309 pieces, dozens, and piculs of cotton goods. They show also increase in miscellaneous piece goods, in metals, and in sundries. At the nineteen treaty ports the imports of English and American drills fell off from 416,699 pieces and 620,803 pieces, respectively, in 1886, to 288,511 pieces, and 464,731 pieces, respectively, in 1887. Cotton lastings rose. Cotton yarn increased from 382,984 piculs in 1886 to 523,114 piculs in 1887.

The import of kerosene was, in 1886, 23,038,101 gallons; in 1887, 12,015,135 gallons, an enormous decrease. The statistical writer says: "As qualifying the vast discrepancy in the figures of the two years I am told that whereas the stock in Shanghai at the end of 1887 was only 5,500,000 gallons, that of 1886 was 10,500,000 gallons."

We find that the value of the imports from the United States in 1886 was 4,647,333 taels, and in 1887, 3,398,390 taels, a decrease of over 1,000,000 taels. It is probably accounted for by the decrease in petroleum. The exports to the United States were, in 1886, 11,928,404 taels, and in 1887, 11,545,406 taels. The total trade with the United States was 14,677,487 taels in 1886, and 12,314,310 taels in 1887.

TRADE OF LEADING FOREIGN COUNTRIES.

The imports and exports of the leading foreign countries were as follows: Hong-Kong, 89,154,228 Haikwan taels; Great Britain, 42,149,286 Haikwan taels; Europe (Russia excepted), 14,132,954 Haikwan taels; United States, 12,314,310 Haikwan taels; Japan, 7,678,442 Haikwan taels; India, 6,334,945 Haikwan taels; Russia and Siberia, 5,704,281 Haikwan taels.

SHIPPING STATISTICS.

Of vessels entered and cleared in 1887, the representation of the most important countries was as follows: Great Britain, 15,917; Chinese, 6,402; Chinese junks, 1,996; German, 2,749; Japanese, 409; American, 255; Spanish, 132; French, 121.

The shipping statistics show an increase of 137 vessels, aggregating 443,901 tons over the year 1886.

EXCHANGE.

The average rate of exchange on London during 1887 was the lowest average of any year on record

The average value of the Haikwan tael during 1887 was 4*s.* 10½*d.*, against 5*s.* 0½*d.* in 1886. To understand exactly this question of exchange let it be remembered simply that a person lays down at the bank at Shanghai a tael and inquires how much that will bring him in London. When the answer is 4*s.* 10½*d.*, instead of 5*s.* 8½*d.*, as in 1882, it will be seen how trade is affected and how greviously those residents of China suffer who are compelled to send money home to their families. The tael in which they receive their salaries or wages is becoming day by day of less value, and their incomes are proportionately diminished. If, however, all the money earned is spent in China, the depreciation of the tael only remotely affects them. Prices of labor and of articles produced in the country are ordinarily not affected by the depreciation of silver. It is only the foreign value that is depreciated.

It must be said also that the high price of exchange or the low price of silver, as compared with gold, tends to stimulate foreign trade. As there is a great loss on silver converted into gold on London, the foreign merchant increases his exportations that he may get products in London which may be bargained for gold. The import trade is likewise stimulated, because the merchant is induced to bring goods to China which may be exchanged for native products. The low rate of exchange is, therefore, not an unmixed evil. The customs reports for 1887 show a considerable increase of business in spite of dearness, or, as they would say here, lowness of exchange, and in spite of the lugubrious complaints of all classes of merchants, particularly of dealers in tea. The tea market opened this year at higher rates than ever before, which fact is a curious commentary on the alleged ruin which attended the trade last year and which was prophesied this year.

OPIUM.

The statistical secretary thoroughly explains the new opium regulations. February 1, 1887, the system of collecting duty and lekin on opium, which had formerly appertained to the local officials, was transferred to the Imperial maritime customs.

Two new offices of the customs were opened on April 2 at Kowloon (opposite to Hong-Kong) and Lappa (near Macao), to have supervision over the revenue accruing to China out of the commerce carried on in junks between Hong-Kong and Macao, respectively, and the main-land of China.

On June 1 Hong-Kong passed a new ordinance placing the opium trade within the colony under special regulations. These regulations prohibited the unauthorized possession of raw opium in smaller quantities than whole chests, and required retailers to record and account for raw opium taken over to be repacked into small-sized packages. As there are no means of getting raw opium into possession for any improper use the business of opium smuggling practically ceased. A like law was made for Macao. The tariff being

the same in the nineteen treaty ports and in the two new ports of Kowloon and Lappa, and there being no difference in the tariff in favor of opium carried in junks, as heretofore, opium is now generally carried by steamer.

The secretary does not think that opium consumption has increased in China; but, for the first time, there are accurate statistics. Heretofore large quantities entered China lawfully and unlawfully of which no record was kept. A preference for native opium is said to have been developed. The Haikwan tael, in which the customs revenues and all values are stated, is equivalent in English money to 4*s.* 10½*d.*; American gold, $1.20; French francs, 6.18; German marks, 4.95; Mexican dollars, 1.54. The picul is equivalent to 100 catties, or 133⅓ pounds avoirdupois, or 60.453 kilograms. The catty is equivalent to 16 taels, or 1⅓ pounds avoirdupois, or 0.60453 kilograms. The tael is equivalent to 1⅓ ounces avoirdupois, or 0.037783 kilograms.—PEKING, *July 14, 1888.*

CHARLES DENBY.

DANISH AGRICULTURAL EXHIBITION.

I herewith present a report on the agricultural division of the Great Northern Exhibition, which was opened to the public under such favorable auspices in this city on the 18th of May last. This agricultural department is divided into four sections—No. 1 containing a general arrangement, as well as what may be styled a history of agriculture; No. 2, agricultural products; No. 3, live stock; No. 4, dairy drift. According to the catalogue, the first of these sections contains no less than five hundred and fourteen numbers from Denmark. It is certainly the first time that an exhibition of this nature has been seen in this country, and will unquestionably draw the attention of all visitors, as the whole representation is carried out in a very masterly manner. An insight is here obtained of the habits and conditions of country life in by-gone days. On entering this division the eye is at once attracted by the numerous colored drawings decorating the different walls—characteristic drawings, bringing to view the great changes and improvements which have taken place in farm buildings during the last hundred years, from the small, low dwellings of wooden frame-work of the last century to the solid and well-arranged brick-built houses, with their good out-buildings for cattle and storage of products, of the present time. Here, again, is to be seen a colored drawing of an old village meeting-place in the Island of Fyen, at a time when every town had its store beneath a tree, the village horn summoning all the villagers to the meeting-place, where all matters concerning public business were then discussed under the presidency of the leading man of the village. Here, also, are to be seen drawings of the gradual development and great improvements in the plow, from the plow of the middle ages, and the old Danish wheel-plow, to those of the present day. Likewise drawings of the fast-disappearing common pasture grounds, to which the cattle of the towns-people were driven, under the care of the herdsmen; with drawings, also, strongly bringing to view the difference between the horses and cattle

of days of yore as compared with the fine types of the present age. Furthermore are to be seen large and interesting charts, demonstrating the various influences affecting the condition and development of agriculture. Here is to be found noted the time of arrival of spring and autumn in Northern Europe, with the mean temperature and rainfall in Denmark during the months of April to October. Here is also to be seen in which way the difference of temperature in this land makes itself felt. For example, through the close proximity to the sea, on the coasts of Jutland, Fyen, Zealand, and Bornholm, the climate from August to October is seen to be considerably milder than in the interior of the country. Again, the influence of the forests in relation to the moisture is also here shown by the greater amount of rainfall in the woody districts of the north of Zealand as compared with the remaining districts of the island; and the agriculturist, on his visit to this section, may learn that, however much he may complain of the hardships of the present times, still, when passing under review the conditions of their class in days of yore, he can not do otherwise than acknowledge and rejoice over the wonderfully great progress and improvement made in every direction since the introduction of all the great agricultural reforms.

The second section of agricultural products makes a very pleasing and harmonious impression. The numerous exhibitors have exerted themselves to the utmost, and the result is certainly all that could possibly be desired. This especially may be said both in regard to cereals as to seed samples, of which, both from Denmark and Sweden, exceedingly fine collections are to be seen. Likewise the group of scientific aids towards the advancement of agriculture is highly interesting; and this is specially due to the rich collections sent by the Veterinary and Agricultural College, as well as from the various models in plaster of Paris and papier-maché from Germany.

The dairy at full work, as might be expected, attracts great attention and has at all times a large number of visitors. In this dairy both the machinery and implements in use are exclusively of Danish manufacture. This department naturally contains very valuable and fine collections of everything appertaining to a well-appointed dairy—centrifuges, churns, kneading-machines and boards, cheese-presses, cream casks, weights, heating and cooling apparatuses, pails and wagons used for transport, etc. Numerous and fine exhibits of butter and cheese coloring, of cheese-rennet, etc., are also to be found. Likewise, in this department, have the Swedish exhibitors come forward with remarkably fine exhibits, and which plainly bear witness to the eager competition between the two countries on dairy ground. According to the catalogue, there are three hundred and sixty-three exhibits under this branch, of which two hundred and ninety-five are from Denmark. A visit to this department must present, even to the minds of non-agriculturists, a clear conception of the important position held by the dairy drift in these northern kingdoms.

Of machinery and implements for agricultural use there is a very rich collection from Denmark, Sweden, and Norway. It is, however, to be regretted

that this department is spread over different spots, and for this reason can scarcely make so imposing an impression as when it had been united in one place. A large number of exhibits from all of the three countries are to be found in the machinery building. Then, in the open plain, are to be seen the exhibits of Swedish implements and machinery, together with rails, wagons, etc., for field railways, whilst in another spot are to be found extensive exhibits of locomotives and thrashing-machines, placed in open sheds but sheltered from the rain, as also a large number of plows, harrows, and other implements capable of supporting exposure in the open air. As showing the richness of this exhibition of agricultural machinery and implements, it may be observed that these are represented by exhibits of 54 sowing-machines from Denmark and 10 from Sweden; with 19 mowing and reaping-machines from Denmark, 8 from Sweden, and 1 from Norway; with 19 horse-rakes from Denmark and 8 from Sweden; with 36 thrashing-machines from Denmark, 18 from Sweden, and 1 from Norway. Of various kinds of plows, are to be found: 110 from Denmark, 22 from Sweden, and 14 from Norway; and of road-cleaners, horse-hoes, weeding-machines, seed-harrows, rollers, winnowing and sorting machines, root-cutters, crashing-machines, oil-cake bruisers, the exhibits, as might be expected, are on a large scale, there being altogether 490 numbers from Denmark, 139 from Sweden, and 38 from Norway.

In the historic collection will also be found a great wealth of objects in use in olden times—such as plows, harrows, spades, forks, rakes, carts, saddles, horse-bits, etc.—and when, side by side with these old (and very old) types of implements are to be seen the more modern articles, and the harvest of the new, it may be said that, step by step, the visitor finds placed before him an illustration of the gradual stages of progress and improvement that Danish agriculture has traversed in the domain of agricultural implements.—COPENHAGEN, DENMARK, *August 7, 1888.*

HENRY B. RYDER,
Consul.

AMERICAN AND RUSSIAN OIL IN BOMBAY.

The sales of kerosene oil from June 1, 1887, to June 1, 1888, were 870,000 cases, of 10 imperial gallons each. Out of this 320,000 cases were American and 550,000 cases Russian; both 125° Government test; both put up in cases of 2 tins of five imperial gallons each. The American oil realized 3.70 rupees per case. Russian oil, 3.50 rupees per case. Quality about the same. Russian oil is very generally used, and the brokers report that Russian oil is expected to come freely on the market here in future. Sun Flake American oil, 150° Government test, is sold in smaller quantities at higher price, but the majority of consumers use 125° Government test oil, American or Russian.—BOMBAY, *July 31, 1888.*

B. F. FARNHAM,
Consul.

COMMERCE AND INDUSTRY OF THE PROVINCE OF KOUANG-TONG.

[From Bulletin Consulaire Française, June, 1888—Translated by Gaillard Hunt.

Kouang-Tong is a province in the south of the Chinese Empire. It is the largest, the richest, but, it must be added, the least known. Its commercial relations with the people of the East began in 1720, with the establishment of the Hongs, a privileged corporation of Chinese merchants, to whom was given the monopoly of foreign commerce.

The province is bounded on the north and northeast by a range of mountains called Nan-Sin, which separate it from Hou-Nan, Kiang-Si, and Fo-Kien. To the west it touches Kouang-Si and Tonkin, and in this direction it has as a natural boundary the river Annan-Kiang, the chain of Fen-mo-lin (the Ten Thousand Mountains), and the lofty heights of Loh-Yang. To the south the coast extends from Fo-kien to Tonkin, a distance of 240 leagues. It has most excellent harbors and the ports of Swatow and Pakhoi, open to foreign commerce, are upon this coast. The large island of Hainan, of which Kiung-Tcheou-Fou is the capital, and which has Hai-How as its port of commerce, is administratively dependent upon Kouang-Tong. Situated directly above the island is Lie-Tcheou, the extremity of which, traversed by the 20th degree north latitude, is the most southern point of the Celestial Empire. The number of inhabitants of Hainan, Chinese colonists, is now 2,300,000 people. The center, which constitutes the heights known as Ou-Tc'hé-Chan (mountains of Five Fingers), is occupied by savage tribes called Li.

The population of Kouang-Tong is estimated at about 30,000,000. It has centered principally about the deltas, where towns and villages succeed each other at short distances. The inhabitants are allied to the Pounti, Hoklo, and Hakkas races. The Pounti are the most numerous, and form the class of merchants, aristocrats, and rulers. The Hoklos dwell more particularly among the swamps of the large rivers and the country on their banks. They live almost entirely in their boats, and constitute that vast fleet of watermen which crowds the river at Canton and spreads by tens of thousands over every portion of the delta. The Hakkas, who have for the most part retired to the northeast of Kouang-Tong and to the island of Hainan, represent the Chinese race, properly speaking, in the provinces of the south. They are almost entirely of the agricultural and laboring classes. Their dialect differs from the dialect of Canton, the Pehoa, which is the Pounti tongue pure. This province, which has a surface of about 234,000 square kilometers, is divided administratively into 9 *fou*, or cities, of the first order, 5 *ting*, 4 *tcheli-tcheou*, 7 *tcheou*, towns of the second order, and 77 *shien*, towns of the third order. It forms with Kouang-Si the general government of the two Kouangs.

The climate of Kouang-Tong is said to be similar to that of Tonkin. The temperature follows the changes of the monsoons. It is, consequently, less equal than in other countries of the same latitude. The monsoon of the southwest always brings with it, in the basin of the Si-Kiang, showers and heat. From June to August storms are of almost daily occurrence, and it is during this period that the tropical flowers are in all their splendor. With the regular winds of the northeast, from October to February, the drought appears, and with it a low temperature. The mountains and plains take at this season the yellow tint of the regions of the north. The months of February and March are misty and cold. The average temperature of the year is 22° Centigrade; in August it is 28°, and in February 15°.

The cities of Kouang-Tong are nearly all built either upon the banks of a stream of water, at the entrance of a mountain gap, at the mouth of some gorge, or on some spot where the streams and the affluents of navigation necessitate a depot of merchandise, the only routes generally practicable being by the rivers.

The Si-Kiang (the River of the West) is the principal commercial route of the province. By this river Canton is put in communication directly with Kouang-Si, Kouei-Tcheou, and Yun-Nan. Steam-boats drawing 12 feet of water are able to go up without difficulty as far as

Ou-Tcheou-Fou, near the boundary of Kouang-Si, about 300 kilometers from the sea, and the merchant junks penetrate even to Pe-tche. This magnificent river has a course of at least 1,500 kilometers. At Ou-Tcheou-Fou the Si-Kiang receives the water of the Fou-ho, which descends to Kouei-ling-Fou, the capital of Kouang-Si. It passes by Nan-Ning-Fou, where it takes the name of Yu-Kiang, to where one of the affluents, called the Tso-Kiang, flows to the frontier of Tonkin by Tai-ping-Fou and Long-Tcheou.

The Pe-Kiang, (the River of the North) flows into the Si-Kiang at San-Couei, about 20 degrees distant from Canton. It has its source in the mountains Mei-lin, near Nan-Chiong-Fou, which is the entrepôt for the merchandise sent to Canton from Kuang-Si. From this town communication has been established with the basin of the Yang-tse-Kiang by a mountain road running near Nan-Ngan-Fou (Kiang-Si) and by the river Kan, which descends from the lake Po-Yang. This route connects the provinces of the north with those of the south, and is now followed by the mandarins returning to Peking. From Téhao-Tcheou-Fou, a prefectoral town situated about 35 leagues from Canton, one branch of the Si-Kiang runs down to the frontier of Hou-Nan.

San Chouei (the Three Waters) is the limit of the delta. At this point the main river directs its course to the west and reaches the sea near Macao. The other arm flows to the east, passing the important market of Si-nan and Fou-Chan, and joining the innumerable streams of water which flow in the alluvial lands of Canton, and runs into the sea at Bocca Tigris under the name of Tchou-Kiang (River of Pearls).

In the direction of the east a large river, the Tong-Kiang (Eastern River), runs up to Kiang-Si, and has its ramifications in the labyrinth of rivers of the lower Si-Kiang. It flows by Houei-Tcheou-Fou, by Ho-Yuen-Shien, Long-Tchuen-Shien, and Ho-ping-Shien. The depot of the rivers is at Tch'ang-Nin-Shien, about 75 leagues from Canton. By this route the products of the south of Kiang-Si and of Fo-Kien arrive in the delta. At Lao-long-sse, a five days' march from the mouth of the Tong-Kiang, the commercial route is divided into two branches, meeting at Tong-Kin-sse, one of which is a road on the land 4 leagues in length, the other an affluent of the Han. It flows toward Fo-Kien. The main river, Han, on the other hand, runs by the mountains on the west of the province and flows into the sea at Swatow, bringing to the market the principal products of eastern Kouang-Tong, sugar and arachides.

The delta of the Si-Kiang is so well preserved by an immense net-work of natural cane from the waves of the tide, which rises twice a day, that it is almost wholly navigable. The junks, most of which have a large wheel at the stern put in motion by a system of paddles worked by fifteen coolies, circulate freely with passengers in all directions. There are besides on the rivers of Kouang-Tong four or five other species of boats, large and small, for the service of voyagers and official personages. Merchandise, such as salt, rice, indigo, pork, cinnamon, fresh fruits, salt fish, and fire wood has a special variety of boat for its transportation in bulk. One Chinese company has established between Canton, Fatshan, and Kouang-Si a service of thirteen large junks for the transport of textures of foreign production in piece and of some native products. In the space of one month these junks carried to the markets of Kouang-Si about 35,000 piculs of merchandise, and brought back to the delta on return a cargo of products of the interior.

Nevertheless a great part of the merchandise destined for Kouang-Si is sent from the port of Pakhoi. It follows a land route, after having gone up the river Lien or Nan-liou-Kiang for some distance, turning at Yu-lin-Tcheou and Yong-Shien, in eastern Kouang-Si. At some leagues from this last town the water route is resumed at the Chen-Kiang, which flows to the great river of the west at Tang-Shien. This river Chen-Kiang flows through the district most productive in cinnamon. Also, two other commercial routes put the port of Pakhoi in direct communication with Kouang-Si. One runs toward Nan-Ning-Fou, passing by Ling-Shan-Shien and the large market of Lou-Ki by the frontier of Kouang-Si, the other passes by Kin-Tcheou, by Chang-sseu-Tcheou, and comes to Tai-ping-Fou and Long-Tcheou.

By these three roads merchandise of English, German, and American production arriving at Hong-Kong is introduced into Kouang-Si, Yun-Nan, and Kouei-Tcheou more rapidly, it appears, than by the way of Canton and the river. These routes are perhaps more difficult, but, the distance being shorter, the merchandise meets fewer likin stations and is less obstructed. The total value of the foreign importations at Pakhoi in 1886 was 1,705,254 taels. As for exportation the figures reach 1,061,757 taels (statistics of Chinese maritime customs).

The principal articles exported are cinnamon, anise-seed, cakes of arachide, hides, liquid indigo, tin, etc. It is important to the future of our trade at Tonkin that an active commerce should not be established in this direction. If expedition be used it will be easy to turn it to our profit at Long-Tcheou again.

A line of telegraph was started in the province of Kouang-Tong in 1883. The principal stations open to the public are Houang-Pao (Whampoa), Houmen (Bocca Tigris), Fou-Chan (Fatschen), in the delta, Tchao-Kin-Fou, on the Si-Kiang, and at the east Houei-Tchao-Fou and Swatow, at the southwest Lié-Tcheou-Fou, Pakhoi, and, since 1886, Kin-Tcheou and Tong-Sin-Kiai, on the frontier of Tonkin near Mon-Kay. On the peninsular of Lre-Tcheou a submarine cable traverses the Strait of Hainan, bringing together King-Tcheou-Fou and Hai-How. The principal districts of this island have been ever since last year in telegraphic communication with Canton. From Tchao-Kin the telegraph extends into Kouang-Si, following the River of the West. In 1884 and 1885 stations were established at Ou-Tcheou-Fou, Sun-Tcheou, Hung-Tcheou, Nan-Ning-Fou, Long-Tcheou, and Pin-Siang (the port of the south) near the Annamite frontier, and, finally, a wire has been run from Ou-Tcheou-Fou to Kouei-lin-Fou, the capital of Kouang-Si.

The service of transporting correspondence is done by individual enterprise. At Canton a number of Chinese merchants have opened a kind of postal bureau, which has charge of the expediting of letters. But in the interior it is customary to give the communication to a master of a boat, who, provided a reward is designated on the envelope and given on arrival, sees that the letter is properly delivered. Letters intended for officials are transmitted to the under-prefect, and by him forwarded by swift and expeditious boats or by special couriers.

PRODUCTS OF KOUANG-TONG.

Silk and silk manufactures.—The silks of Canton come entirely from the silk-worms of the mulberry tree (*Bombyx mori*). The species *ta-t'san* and *lun-yue* are raised principally in this province. The first corresponds to the variety known as annual; the second to the *polyvolnines* species. The *ta-t'san* or large worms give a silk of beautiful texture and of great brilliancy. The *lun-yue*, from which seven consecutive harvests are made, does not produce a cocoon so fully supplied or a silk so lustrous. The eggs are hatched in the beginning of February. The cocoons produced at this period are saved for reproduction, and the first harvest does not begin till the second hatching. After the fourth moulting the silk-worm, having become clear and transparent, is placed under frames with cells of bamboo to fill a cocoon. The greatest care is taken by the silk-growers in educating the silk-worm. They are occupied almost the whole year. The mulberry tree is also cultivated with great care The trees are planted on plains in parallel rows at a distance of 4 or 5 feet from one another. They are not allowed, as in Italy and in the central part of France, to attain full growth. They are generally young trees, trimmed each year and renewed every five years. It takes at least 20 piculs of leaf to nourish an ounce and a half of silk-worm from the day of hatching to the day of placing in the frames for the cocoons. The first harvests are the products of fresh cocoons. The process of suffocating is not until the last harvest, the abundance of which furnishes a supply for many months. It is estimated that 100 pounds of good cocoons give 20 pounds of silk.

The rich silks of this province are distinguished by the name of the district where they are produced or the locality in which they have been spun. The districts of silk culture are all in the delta in the environs of Canton. The best known localities, both as to quantity and

quality, are the under-prefectures of Nam-Chiai, Kiou-Kiang, Mei-Ts'uen, Sha-t'o, Si-Kiao-Chou, under-prefecture of Chun-Teh, Kouei-Tcheou, Kan-Tchou, Jong-K'i, Hoang-Lien, Lo-Leou, Shui-T'ang, Long-Kiang, Long-Chan, Nang-Ngno-Fou, and in the under-prefecture of Sam-Chouei, Si-Nan.

These different districts produce indiscriminately the *tsatlee*, or native *paque-taille*, and the silks of the spinning factories. There are 120 European spinning factories in the neighborhood of Canton.

The exportation of silk *grège* reaches at Canton the figure of 1,300,000 kilograms per annum on the average. The waste of silk, stuffings, curlings, and opened cocoons, and rarely cocoons entire, are exported to the markets of Europe and Bombay.

The transactions in silk in the Canton markets are carried on by native merchants, who operate either on their own account or for a commission with those who collect the raw product and bring it in the districts where it is produced. The silk is sent to foreign merchants free of all customs duty or other charges. The payments are made in cash.

For the year 1887 the total exportation of silk of all qualities and fragments of silk was about 2,000,000 kilograms.

Silk fabrics are very numerous in kind and quality. It would be difficult to give the detailed nomenclature, and it is impossible to state the importance of the native consumption. The principal articles ordinarily made are satins, velvets, silk handkerchiefs, gauze, crêpe, embroideries, ribbons. The stuffs are all woven by the most primitive methods. Canton and Fatschan are the centers of industry in Kouang-Tong. The embroideries, the crêpe shawls, and the silk for handkerchiefs, and that already made into handkerchiefs are the only objects of regular European demand. For some months the manufacturers of Lyons buy in great quantity the silk for handkerchiefs to imprint and stamp.

The silk fabrics exported annually from Canton weigh more than 360,000 kilograms, and in value are worth more than 30,000,000 francs.

Teas.—Canton exports both black and green teas, more particularly the qualities known as "Congous" or seented caper and seented orange caper. The most renowned regions of production are Ta-Chan, near Canton, Lo-Ting-Tcheou, at the west of the province, Ts'in-Yuen, near the Pe-Kiang, and Kouang-Kon, at the environs of Kouang-Ning-Shien, upon the river Souei-Kiang. The principal higher qualities of seented caper come to the market of Si-Kiang, in the sub-prefecture of Yan-Shan. Some tea is also cultivated in the surroundings of Ho-Yuen, Hoh-Chan, Ho-Ning, Ping-Yuen, etc.

The cultivation of tea is very remunerative to the farmers. It is indeed easy and requires little care. The shrub is produced from seed, and prefers a damp marled soil upon the side of a hill exposed to the south. Generally no preparation of the soil is necessary. Nevertheless in some districts the young plants are manured with fresh herbs. It requires three years before the tea-plants will bear. The first harvest, which furnishes superior qualities, is made in May; the second in June. The latter is much the more important. The third and fourth, which are in the middle of August and September, give the common teas. The preparation necessary for the leaf is of the utmost importance for its quality and preservation. After gathering, the leaves destined to become black tea are dried in the sun; those which are to become green tea are dried in the shade. The leaves are then picked, winnowed, and torrified. The teas are sent in sacks and transported to the market of Canton by special boats, as has been said above. The packages of boxes of zinc are made in Canton. For their purchase the foreign buyers treat with native brokers, who again deal directly with the owners of the crop.

Before being relieved of customs duties on embarking at the port of Canton the teas have been submitted in the interior to every contribution, to the likin and the tolls, which are at least 1 tael per picul for teas of the more distant districts and 0.95 tael for the nearer districts. The varieties of Congous harvested in the region of Ta-Chan goes almost entirely to Macao. In this direction they encounter fewer likin stations. They escape also the Chinese customs

duties (Macao is a free port), and consequently are sold at a much lower price. At Canton the Congous are sold at 14 to 30 taels per picul. The price for the seented caper and orange pekoe varies from 10 to 30 taels.

The exportation of the teas of Canton for 1886 did not attain the figures of 102,902 piculs, being a decrease from the year preceding of 28,210 piculs. This diminution is becoming more pronounced each year, and the commerce in tea, not only in Kouang-Tong, but in all China, is destined to disappear in a little time if the Imperial Government does not take measures immediately to protect it against the competition of the teas of India, Ceylon, and Java. These last are free from all levies of interior taxes or export duties. Again, the expense which is incurred by teas landed at London is 30 per cent. more considerable for those of China than for those of India. As a result the sale for consumption of the Chinese teas has diminished very sensibly—about 6,500,000 pounds in five months.

For remedying this state of affairs it will be necessary to remove all encumbrances from the cultivation and preparation of the teas of the Celestial Empire, and to free this commodity completely from all species of likin taxes and from all duties of exportation. This is the view that has been expressed by the Chamber of Commerce of Fou-Tcheou and by the dealers in tea in the city of Canton.

Sugar.—Sugar-cane is cultivated in almost all of Kouang-Tong. The richest places of cultivation are the departments of Kouang-Tcheou-Fou, Tchao-Tcheou-Fou, Houei-Tcheou-Fou, Nan-Shiong-Fou, in the east of the province, and the districts of Hai-an and Hai-how, in the island of Hainan. Many varieties of sugar-cane are planted in these different regions, the most generally cultivated being the Tcheou-Chan (bamboo cane). It is white, hard, and thin, but the juice is plentiful. One planting gives two crops, but the crop of the second year is less productive than is that of the first year. The cane is the only sugar product cultivated by the Chinese.

The works for the preparation of the sugar are suppled with tools and established with little cost. The material is without real value. The rolling is done on the spot by the proprietors of the plantations. The mills are composed, as at Manila, Java, and in Cochin-China, of two wheels put in motion by a buffalo. Three boilers, supplied with a fire of dried cane-stalks, receive the juice, which, when boiled, becomes thickened. A little lime is added, and it is cleared with the white of egg. The sugar is then covered up, purified, and drained into moulds of sandstone. Although very simple and primitive, the Chinese methods give good selling sugar.

There are three kinds of sugar, the pe-kang (white sugar), the houang-kang (red sugar), and the ping-kang (candied sugar). These three classes are subdivided again according to their qualities—the fine white, the white, and the light brown for the white sugars; the clear yellow, the ordinary yellow, and the yellow brown for the red sugars. The candied sugar gives three or four kinds, the transparent candy and the white, the transparent and the clear yellow, and the candy opaque and brown. The prices in the market of Canton are in proportion and according to the quality. For white sugars, $7 to $8 a picul; for the red, $5 to $6, and for the candy, $7 to $9. Inferior raw sugar and molasses are also sold at prices ranging from $1.75 to $3 a picul.

Sugar is one of the essentials of Chinese food. The consumption is enormous and can not be calculated. The province of Kouang-Tong sends each year, by steamer direct to Tien-Tsin, Tchefou, Hankheou, Shanghai, and Ningpo, more than 700,000 piculs of sugar to be distributed among the different ports.

The exportation of sugar from Canton for Hong-Kong and foreign ports gave in 1886 the following figures (Statistics of Imperial Maritime Customs): brown, 79,595.79 piculs; white, 2,334.93 piculs; candy, 4,040.99.

From Swatow the value of the exportation of white and red sugars exceeded 5,000,000 taels, representing, approximately, 1,500,000 piculs. Kiung-Tcheou-Fou (Hainan) orders from the market of distribution at Canton, by steam-ship, more than 130,000 piculs a year, and the port of Pakhoi about 70,000 piculs.

Three refineries, on the European system, have been started at Hong-Kong and one at Swatow. The refined sugar which they produce is white and better purified than that of native manufacture. But the Chinese prefer their own sugar, saying it is much richer and more highly saccharine. Nevertheless, as the following analysis shows, it can be seen that the raw sugar refined by the European process is 20 per centum richer than that refined by the native process. However that may be, the Chinese buyers always show a preference for the native sugars, although they are much dearer than those of the European factories of Hong-Kong and Swatow. Some merchants deal in both kinds, and sell them in the ports of the north under the title of native sugars. They thus make large profits.

The sugars of Java and the Philippines are sometimes imported into Hong-Kong, Shanghai, and Tien-Tsin, and put upon the market at a very low price in competition with sugars of Kouang-Tong.

Cassia lignea (or cinnamon of China).—The *cassia lignea* is the dried bark of a tree 8 or 9 feet in height. The *laurus cassia* is planted upon the slopes of hills. It grows rapidly and easily. The Chinese cinnamon, which is sold in the markets of Canton and Pakhoi, comes from the department of Lo-Ting-Tcheou, in Kouang-Tong, and from the districts of Ta-ou and Yong-Shien, in the Kouang-Si, by the right bank of the Si-Kiang. The exportation of this product for Europe, America, and India is about 80,000 piculs per year, and attains approximate value of 2,600,000 francs.

The commerce in *cassia lignea* was, some years since, given to a syndicate of ten or twelve Canton merchants. They bought this monoply very dearly, and had besides to pay light taxes of likin. In 1886 this syndicate sold or gave up its privilege to an influential employé of the palace of the treasurer of the province. The market of *cassia* was at the mercy of this individual. One German house made an attempt to establish routes of trade and sent one of its agents into the cinnamon districts. The high authorities of Kouang-Tong fearing to lose a considerable revenue, which, by the transit pass, ought to go into the chest of the central treasury, with this object in view, taxed the *cassia* a fixed likin duty of one-half tael per picul. The transit pass did not give the buyer a sufficient advantage.

The average price of the *cassia lignea* at the place of production is now for 1,000 piculs $3,270. The prices for this same quality in the market are: (1) Warehousing in the interior, carriage, boat, packing in mats, and transport on board junks as far as the River of the West, 275 taels; (2) transport to Canton, 200 tales; (3) likin tax, 500 tales; total, 975 tales, or $1,350; (4) warehousing and packing at Canton, $1,100; add the price of purchase, $3,270; total in dollars for 1,000 piculs, $5,720.

The *cassia* exported from Pakhoi descends the Ning-Shien, at Lien-Tcheou-Fou, by Pei-Liou-Shien and Yu-Lin-Tcheou. Although this route may be much shorter than that by the Si-Kiang, at Canton, the charges are still considerable. It is not, moreover, practicable during the time of the rains.

The maritime customs authorities, administered by Europeans, receive 94 cents on the dollar per picul of *cassia* on its exportation from Canton and Pakhoi, whilst the Chinese customs, properly speaking, in order to draw from this some revenue, levy upon the products in junks to Hong-Kong an export duty of but 70 cents on the dollar. The foreign merchants find it to their advantage to buy the *cassia lignea* free of all charges at Hong-Kong, where it is sent in junks by the native merchants for a freight of $80 per 1,000 piculs, and delivered at the approximate price of $6.50 per picul.

Cereals.—Rice, wheat, corn, millet, barley, sorghum, and buckwheat are cultivated in all the districts of Kouang-Tong. The greatest care is taken in the cultivation of rice, the ground which is to receive the plant being very thoroughly manured and carefully prepared. The same field gives each year two harvests of rice and one of wheat. According to the situation and the nature of the soil, they sow either white, red, marsh, or mountain rice. The first harvest is reaped in this province in July and the second in November. On an average the rice returns a yield of ten for one, and good ground produces 36 hectoliters per acre.

The price of rice is approximately at Canton for superior quality 2.90 taels; for the average quality, 1.90 tael, and for poor quality, 1.60 tael. The result is variable.

The grain harvested in Kouang-Tong is not sufficient for the support of the inhabitants. There is imported into this province, by way of Pakhoi and Canton, from Saigon and the ports of the Yang-Tsi, about 5,500,000 piculs of rice each year. A part of this valuable grain is sent by the River of the West to Kouang-Si, which in exchange sends to Canton superior rice. This province is, in fact, very renowned for its fine quality. This cereal is an important article of commerce, and the city of Tong-Chuen, upon the Si-Kiang, between Ou-Tcheou-Fou and Nan-Ning-Fou, is one of the largest markets for rice in the south of China. If, by reason of drought or freshet, one harvest fails, the figures of importation of rice are doubled and tripled in all the ports of Kouang-Tong accessible to steam-ships and junks of the high sea. But the means of transport into the interior are very slow and sometimes impassible. In 1885, after a disastrous flood, famine followed in Kouang-Si. Boats loaded with rice went from Canton, which do not ordinarily take more than eighteen or twenty days to reach Ou-Tcheou-Fou, had at this time to struggle against the violence of the current of the Si-Kiang, and did not reach the frontier of Kouang-Si until after a journey of more than one month. If the Chinese would permit the railroads of Tonkin to penetrate into Kouang-Si, the inhabitants would be, in case of distress, under shelter from the horrors of famine, which will always menace them so long as their province shall continue to be provided with long and difficult routes. This would, perhaps, be a good reason for demanding from the Imperial Government that our railroads be allowed to enter their boundaries.

Mats.—The manufacture of mats of reed, bamboo, and rushes, and the *coix lacryma*, in Kouang-Tong. The last variety is especially made into sails for junks.

The matting woven from cane is about the only article of this kind exported to foreign countries. The steam-ships alone, which sail from the port of Canton, export each year more than 150,000 rolls. The larger part is destined for the United States. Nevertheless it is worthy of note that the exportation of this article to France is increasing from day to day; but it would be difficult to give in figures, even approximately, the value of the importation. The French demand for this production of Canton industry continues to be conducted entirely through the medium of German and American houses, and the merchandise is sent from Hong-Kong, the port of distribution for the commerce of this province. The matting is woven at Canton and in the districts where the reed is cultivated; at Lien-Tan, department of Lo-Ting-Tcheou, and at Tong-Kouag, at the west of Canton. The most beautiful quality is made at Lien-Tan (the reed which is produced in this region being fine and solid); the average quality at Canton, and the inferior quality at Tong-Kouang. The first harvest of reed is effected in the middle of June and July, the second in October and November.

The matting in generally sold in rolls 40 yards in length and 1 yard in width. A variety is made for fire-places in France 7 feet long and 2 feet wide. The kinds of matting and their price per yard are—

	Cents.
Tong-Kouan cargo	10½
Contract	12
Fine contract	14
Imperial	19
Damasked	25

For the sum of three-fourths of a cent or more per yard one may obtain a roll of one piece alone, except, perhaps, for the ordinary qualities. The woof of the matting is in large threads of tsing-ma (hemp). There are four varieties of woof in the manufacture of reed matting: Ningpo, large, about one-half inch; Hakchai, three-fourths of an inch; Lien-Tan, 1 inch; mixed, different lengths.

The damasked matting and that with patterns are woven with reeds, tinted generally with analine colors imported at Canton by some German settlers. The price of a roll of 40 yards of matting varies with the quality:

	Pounds.
Tong-Kouang cargo	55 to 70
Contract	70 to 80
Fine contract	85 to 90
Imperial	95 to 100
Damasked	95 to 100

An export duty of 0.2 tael per roll for matting is paid to the customs authorities.

Fire-works.—The workers of Kouang-Tong are reputed very expert. They make at Canton, Tong-Kouan, and Houang-Kong all sorts of pyrotechnics, fire-crackers, large and small, sky-rockets, fuses for burning on the water, roman candles, artificial contrivances of difierent varieties, spears, sheaves, fuses for war and for signals, etc. The inhabitants of this province have considerable skill for artifices of every kind. A marriage, a burial, a religious ceremony, and a public fête are always accompanied by the bursting of fire-crackers.

Fire-crackers are exported in large quantities to the United States, 70,000 piculs a year at least at a valuation of about 4,000,000 of francs. They are packed in cases of 50 or 60 packages. Each package is wrapped in paper, and contains generally 64 crackers; others are of 72 or 80. Some are called cannons and are 1 foot long and 4 inches in circumference. Indeed all dimensions demanded are made.

The actual prices of fire-crackers at the markets of Canton are: For a pack of 64 fire-crackers, 62 cents; for a pack of 72 fire-crackers, 69 cents; for a pack of 80 fire-crackers, 76 cents.

The native merchants, Chou-Ning and Choeyn-Sun, at Canton, make and prepare pyrotechnics especially for exportation.

Ginger.—Ginger flourishes abundantly and with facility in nearly all the districts of Kouang-Tong. The roots of the plant are an important article of export of this province. They are sent forth in a raw state, preserved, or in a sirup. At Canton two native merchants, Chen-Loong and Man-Loong, are occupied with the preservation of ginger, various sweet meats, and dried fruits, *li-tchi*, etc., intended for foreign exportation. The ginger preserved and dried is sent in small square cases of zinc; that preserved as a sirup in jars of glazed pottery and exported in cases of 6 jars.

The actual price of raw ginger is $9.50 per picul. The quality called mandarin ginger is put up in barrels and costs $11.50 per picul. The ginger in stalks sells for $5 per case; the white label, $3.50; the red label, $6.70. The price varies little.

The annual exportation of ginger attains the figures of 14,000 piculs. There is also exported annually not less than 17,000 piculs of preserved ginger and other similar productions, oranges, large and small, prunes, melons, kom-kaua, houan-pe, etc.

This commerce at Canton is almost entirely in the hands of Germans. They export the ginger and other sweet manufactures and the sirup to Hamburg, England, the United States, and Australia.

Paper.—A number of varieties of paper are made in this province of bamboo, *broussonetia papyifera*, rags, the bark of many trees, mulberry leaf, sea-weed, rice-stubble, straw, etc.

The bamboo paper is exported in considerable quantities to England, Holland, France, and India. It is much used in engraving and lithographing. The good quality is fine silky yellowish white. The approximate value is $1.60 per 10 reams of 100 sheets. The size of the sheet is about 34 centimeters. The shipments are made in cases for the first quality, and in bales of 40 reams of 100 sheets each for those of the second. The paper from fiber of *broussonetia* is used almost entirely in China. It is firm, supple, and solid. The superior qualities are similar to the quality known as silk. The yellow paper, thick and brittle, intended for packing, is made of a paste of straw or the filaments of bamboo mixed with rice-stubble.

The exportation of paper in this province increases each year. It attained in 1886 the figure of 34,498 piculs, being a value of 278,540 taels (Statistics of Chinese Imperial Customs).

Tobacco.— Kouang-Tong is one of the provinces of the Celestial Empire the most productive in tobacco. Almost every family plants some in its garden, and nearly every house is provided with a certain portion. The cultivation is carried on on a grand scale in the department of Nan-Shioung-Tcheou, upon the Pe-Kiang, and in the district of Ho-Chan, at the west of Canton, prefecture of Tchao-Kin-Fou.

The leaf tobacco of Nan-Shioung-Tcheou is called Chen-Nen, and is sold for 24 taels the picul; that of Ho-Chan is known as Tien-Yeh, and costs 23 to 24 taels the picul.

Tobacco is prepared more especially at Canton and at Sin-houei-Shien. The leaves are placed flat, the one on top of the other, and, tied by the stems, are bound in bunches. They are then picked and afterward stripped of their leaves. After being cut the leaf is beaten and flattened, and then, to prevent any loss in strength from the effects of dessication and to insure smoothness for small and regular cutting, it is moistened with an oily substance, in which is sometimes thrown a light solution of opium. At Canton not only the tobacco of Kouang-Tong is prepared, but also that imported at Fo-Kien and other provinces. The importation of tobacco in leaf in this port is 14,500 piculs per annum on an average. At Canton and Sin-houei-Shien seven different qualities of tobacco are prepared at the following prices per catty:

	Taels.
Tin-Chou	1.40
Chan-Chou	1.40
Eul-Chou	1.00
Tin-K'in	2.40
Pei-K'in	1.60
Chan-K'in	1.20
Houang-Yen	1.80

These tobaccos are generally of a yellowish brown color and cut in very close fibers. They are sweet and their odor is slight and sufficiently agreeable. They are smoked in water-pipes. The inhabitants of Kouang-Tong consume an enormous quantity of tobacco. It is estimated that of 100 men and women 70 or 80 are smokers.

In the market of Canton tobacco may be bought from many dealers. The exportation from this port of tobacco by steam-ship alone annually approximates: Prepared, 18,000 piculs, 250,000 taels; in leaf, 1,500 piculs, 8,000 taels.

From Swatow not more than 20,000 piculs per annum, at a value of 550,000 taels, are exported, but for the most part this tobacco is sold at Fo-Kien.

The island of Hai-Nan produces tobacco in a quantity sufficient for its consumption, and 700 or 800 piculs are exported each year.

Soya.— Soya (in Chinese Cheu-Yeu) is a seasoning made with uncooked black beans allowed to ferment. It is a yellow brown liquid. The Cheu-Yeu of first quality costs, at Canton, $5 per picul; the second quality, $4.50. Two sorts of soya are distinguished, the Pe-You, which is less deep in color, clearer, and of which the price is $2 to $3; the Tch'ou-You, which is a soya of superior quality, made from the first fermentation, selling at $6 to $7 per picul.

The native consumption of soya is enormous. It is a condiment indispensable in Chinese cooking. This article has been for a long time regularly exported to England and the United States. It enters into the composition of all the sauces designated as English. It is also used alone and can be found at most of the groceries of London.

Soya is made for exportation at Honan and Canton, and each year there is exported from this port many thousands of piculs. The export duty is 0.4 taels per picul.

Products of dye-stuffs.— Indigo (in Chinese, lan-tien) flourishes in most of the districts of this province, but more particularly in Kouang-Si, where the indigo plant is the object of especial cultivation. The exportation of Indigo surpasses 18,000 piculs, representing a value of about 120,000 taels.

Kouang-Tong produces also the curcuma, the price of which varies between $5.50 and $7 a picul, the wai-fa (in the language of the mandarins, houei-haa), which is a seed similar to the anise, and employed to dye in yellow. The average price is $5 to $7 the picul. In the markets of Canton the gall-nut, which sells at $19 the picul, the Prussian blue, vermilion, the price of which is $52 per box of 100 catties, the saffron, the red wood, cochineal, gamboge, etc., are also found.

The Chinese now use much of the aniline colors for coloring their silks and cotton stuffs. The importation of this article increases each year.

Medicinal plants and drugs.—There are sent out from this province a very great number of medicinal plants and pharmaceutical drugs, much coming from Yan-Nam, from Se-Tchouen, and from Kouang-Si. Canton exports per year more than 25,000 piculs of articles classed as drugs, at an approximate value of 140,000 taels.

The products of this species, more especially in the province of Canton, and of which the exportation to foreign lands is more considerable, are the China root and galanga.

The China root (Chinese smilax) is a sort of sarsaparilla, of which the root (in English China root) is knotty, hard, compact, and reddish brown in color. It is employed in the pharmacies in Europe and in India. This root is placed in sacks and sold at $3 and $5 per 100 catties. From the port of Canton there are exported each year not less than 4,000 piculs

The galanga of China is sent more particularly to India. It is an active stimulant of piquant flavor and aromatic. The price does not exceed $2 per picul.

The markets of Canton, Pakhoi, and Macao furnish for exportation the cantharides, the value of which is $70 the 100 pounds and essential oils of crushed anise, cinnamon, mint, and sental.

Articles of Canton.—Under the leading articles of Canton are classed generally divers productions for exportation, such as canes, furniture, in black carved wood, porcelains and potteries, lacquer, fans, worked ivory, Chinese ink, copper buttons, native rattan, cotton stuffs, jewelry of gold, worked silver, lamps, mirrors, etc.

Equally with articles of greater importance it is well to take note in the first place of canes of all classes, the exportation of which to Europe and the United States is very considerable. They are used for walking-canes, sticks for umbrellas and parasols, tubes for pipes, and for small articles of furniture. Seven sorts of canes are sold in the market of Canton.

We give the following indication of the weight in pounds of packages of 100 and the price in dollars per 1,000 of the varieties most in demand.

Tinglees.—Ten to 60 pounds, at $4 to $6; more sought after than all the other varieties, similar to the canes of Tonkin, but more solid and redder, used for parasols, etc.

Partridges.—Eighteen to 48 pounds, $15 to $35; wood solid, unlike bamboo, and almos black.

Black bamboo.—Eight to 100 pounds, $7 to $70. The demand is active, but the production is not considerable.

Tea wood.—(Not sold by weight) $33 to $35; cane sound, heavy; bark brown, covered with short thorns. The demand is regular, but of little importance.

Wingees.—Eight to 23 pounds, $20 to $40; canes flexible, with knots short and prominent, employed for walking-canes; demand feeble and uncertain.

Pataos.—Thirty pounds, $20 to $25; similar to yellow bamboo, but with the knots very close to the roots; demand of little importance.

Dogs heads.—Twenty pounds, $20 to $25; small cane of the kind of tinglees, but having a root with three knobs, whence comes the names.

The furniture of carved wood is nearly all sent to America and England. The price varies according to the importance of the object and the kind of design of carving and incrustation. Screens of palm leaf are sent to the United States in considerable number. The packing is done in cases of 500, and each case is sold at Canton for $3.25 to $3.30. The carved buttons knickknacks, worked stone (jade), lamps, mirrors, ets., are intended for native use, and are sent almost entirely into the province of China.

As products for exportation of Kouang-Tong and of Hainan might also be mentioned the pulp of the orange, hides, hogs, artificial flowers, horns of stags, oxen and buffalo, horses, leather trunks, etc.

DE BEZAURE,
The Consul of France at Canton.

RELATIVE ADVANTAGES OF THE RAILWAYS AND WATER-WAYS OF GERMANY.

[Translated from the Bulletin du Ministère des Travaux Publics, November, 1887, and published in the Journal of the Royal Statistical Society, June, 1888.]

M. Todt, of Cologne, has recently issued a very valuable publication containing much interesting statistical information and many original views upon the question of the traffic on water-ways and railways in Germany. It deals also with the question of competition between the latter and internal navigation. M. Todt says:

Public opinion in Germany has, for some considerable time, been preoccupied with the question of the favorable influence that might, from the point of view of the lowering of the prime cost and selling prices, be exercised by the development of navigable water-ways. This question has, to some extent, forced itself upon public notice and attracted general attention through the approaching execution of the works in connection with the canal from the Rhine to Ems, also of the canal from the North Sea to the Baltic, and the canalization of the Spree. To these projected improvements, improvements which, to some extent, are actually decided upon, may be added many others, among them being the canalization of the Moselle, the junction of the canal from the Rhine to the Meuse, the canalization of the Ruhr, the lengthening up to Ruhrort and Duisburg of the canal from Ems to the Rhine, the deepening of the Rhine upward towards Cologne, the junction of this river with the Weser and the Elbe, and the improvement of the Oder between Cassel and the mouth of the Niesse. If these improvements were effectually carried out they would constitute a kind of vast artificial net-work over which goods would be transported at a much lower rate than they are at present. The economy thus realized would inevitably tell upon the selling prices, and would open up new outlets for German products.

To the objection that the desired improvements would weigh very heavily upon the finances, at first by the interest and repayment of the capital engaged, and afterwards by the depreciation that the railways would suffer, the reply is made that the navigable ways would assure the development of the mineral and forest wealth now lying idle or insufficiently cultivated; moreover, it is urged that merchandise that could be carried by canals and rivers in preference to the railways are raw materials of small value, which, being carried at a low rate, do not constitute a remunerative traffic.

Those in favor of the development of water-ways rely, besides, upon the enormous increase which for some years has been noticeable in the movement of shipping. From 1840 to 1883 the quantity of goods passed at the custom-house at Emmerich (entrance of the Rhine in Holland) has increased from 381,000 to 4,500,000 tons. At Hamburg, during the period 1857–'60 to 1885, it increased from 500,000 to 2,400,000 tons; at Breslau (1880 to 1885), from 120,000 to 475,000 tons. The movement at the port of Berlin increased during the same period from 1,050,000 to 3,500,000 tons. The Rhine, the Elbe, and the Oder have all taken an increasingly important part in this

general movement, and that in spite of the development of the railway system. It is from this fact that the partisans of canal development draw the most favorable conclusions.

Unfortunately the information available as regards the question of the actual traffic upon the water-ways in Germany leaves much to be desired from the point of view of statistical accuracy, and in this respect compares unfavorably with the same data relating to the various railways. They show in arrivals and departures the movement at the principal ports, and by dividing by 2 the sum of these figures we are enabled to arrive at an estimate of the average traffic on the navigable ways. The origin and destination of the goods are, however, unknown, as is also the distance traversed. The traffic at the intermediate ports is also an unknown quantity. Certain important places, Breslau for example, are absolutely unprovided with the means of collecting statistical data.

The following is an estimate of the quantity of goods carried over the German navigable ways in 1884: Basin of East Prussia, Niemen, Vistula, Pregel, and Passarge, 2,227,000; basin of the Oder, 861,000; basin of the Elbe, 7,767,000; basin of the Weser, 218,000: basin of the Ems, 176,000; basin of the Rhine, 7,565,000; Lake of Constance, 338,000, and the Danube, 210,000 tons, making in all, including the small coasting trade of Frisches and Curisches Hoff, a total of 19,362,000 tons.

It will be seen that the basin of the Elbe holds the first rank, that of the Rhine coming next in the order of importance. The principal traffic upon the Dutch Rhine appears to be shown at the custom-house at Emmerich, the clearances amounting to 2,702,000, and the entries to 1,958,000, making in the aggregate 4,660,000 tons. On the Elbe, at Schandau, it amounts to 1,821,000 and at Hamburg, 2,630,000 tons.

If the trade from abroad were deducted, as well as on the Elbe, the movement at Hamburg corresponding to the movement of the Dutch Rhine ports, we arrive at the following result as showing the traffic for the basin of the Elbe, 5,252,000 tons, and for the Rhine, 4,840,000 tons. The comparison of the two rivers gives somewhat different results, if only the principal arteries are concerned and excluding the subsidiary or feeding lines, for we then find the following results: For the Elbe, 3,712,000 tons, and for the Rhine, 5,960,000 tons. The tributaries of the Elbe show a total higher than that of the river itself, viz, 3,765,000 tons, while the traffic on the Rhine only amounts to 1,040,000 tons. It is Berlin, with its river movement of 3,723,000, made up of 3,085,000 tons entrances, and 273,000 tons clearances, and 365,000 tons transit trade, a movement exceeding in importance that at the port of Hamburg and the chief ports of the Rhine, which gives to the tributaries of the Elbe, particularly the Havel and the Spree, the superiority over the principal stream.

Compared with the traffic on the Elbe and the Rhine, the movement upon the other water-ways appears insignificant. The two first rivers absorb nearly nine-tenths of the trade, leaving to the others only about one-tenth of

the total. It is only the rafts which are of any importance on the water-ways of eastern and western Prussia. The Weser, Ems, and Danube hold the last rank. The movement of shipping is even relatively greater on the Lake of Constance than on these streams, but this may be accounted for by the fact that this lake constitutes, it may almost be said, an extension of the railways which abut upon it. Of the water-ways of eastern and western Prussia, the Niemen and the Vistula are the only ones the length of which is of any importance, but the misfortune is that the course of these streams in German territory is not a very extended one, and the foreign countries through which they flow are not sufficiently advanced, as regards their natural and industrial products, to justify them in devoting any considerable sums to the improvement and development of these ways of communication.

The traffic on the navigable streams of North Germany is of very much greater importance than that of South Germany, as the following table will show:

	Tons (including rafts).
North Germany:	
Basins of the Niemen, Vistula, Passarge, and Pregel	2,227,000
Basin of the Oder	861,000
Basin of the Elbe	7,767,000
Basins of the Weser and Ems	394,000
Total	11,249,000
South Germany:	
Lake of Constance	338,000
Basin of the Danube	210,000
Total	548,000

As regards the navigation of the Rhine it should count for about two-thirds in the river navigation of the north to one-third of that of the south. On the lower Rhine the returns of the clearances at Bonn show a total of 5,000,000 tons, while the entrances amount to 2,500,000. It is the ports of Ruhrort, of Duisburg, and Hochfeld, as well as the transit of goods from or for Holland, which assure to the lower Rhine its pre-eminence. The southern ports, Mayence, Gustavsburg, Mannheim, and Ludwigshafen remain in the background, although the most important tributaries, the Sarre and the canal from the Marne to the Rhine, belong to the southern portion of the basin. The traffic of the Main is almost exclusively composed of rafts. In the basin of the Rhine there is no canal or subsidiary line to be compared to the Havel or to the Spree.

The total weight of goods carried amounts to 16,500,000 tons for North Germany and 3,000,000 for South Germany. If we compare East and West Germany, it will be found that the former has the predominance, thanks to the Elbe and to the water-ways of East Prussia, the traffic amounting to 11,000,000 of tons, while for the west, with the Rhine, Weser, Ems, Danube, and the Lake of Constance together, it does not exceed 8,500,000 tons. It is therefore the northeast district which holds the first rank, notwithstanding the fact that the chief river in Germany, the Rhine, belongs to the west.

The important part taken by North and East Germany in river and canal traffic is due to the greater development of the navigable ways in that flat region where the water-ways offer exceptional facilities for navigation, while the water-courses of the south suffer the double disadvantages of too rapid descent and an insufficiency of depth.

Charles von Scherzer, in his work entitled the "Economic Life of Nations," estimates at 15,897 miles the length of the navigable ways (rivers and canals) of Germany; but this figure has only a theoretical value; it includes, in fact, a vast number of water-ways of a purely nominal importance as regards shipping, and on which there is an almost entire absence of traffic. If only those water-ways are considered on which transportation is regularly effected, and which in themselves count for more than nine-tenths of the general movement, the total length of the navigable ways is immeasurably inferior to the above estimate, and may be approximately stated as follows:

	Miles.
Water-ways of East and West Russia	372
Basin of the Oder	497
Basin of the Elbe	870
Basin of the Weser	280
Basin of the Ems	186
Basin of the Rhine	931
Basin of the Danube	248
Total	3,384

What is carried by waters other than the above is only of secondary importance, the rafts alone being worthy of mention; and even out of the 3,000 miles mentioned above there are some considerable extents which contribute little or nothing to the general movement. Of the 19,500,000 tons circulating on the German rivers and canals 17,000,000 or 18,000,000 are carried over an extent of less than 2,500 miles, as the following will show:

	Miles.
Water-ways of East and West Prussia	370
Oder	370
Elbe	870
Rhine	750
Total	2,360

In the basins of the Elbe and the Rhine a traffic of 13,000,000 tons is concentrated over an extent of 990 miles, 250 of which for the basin of the Rhine, and 740 miles for the basin of the Elbe.

So far as concerns the river and canal fleet, and the comparison of sailing with steam, statistics show results which are by no means conclusive, as no account appears to be taken of the foreign boats navigating German waters. On the Rhine, for example, there are numbers of Belgian and Dutch boats trading. In 1882 the German river and canal fleet appear to have been as follows:

Basins.	Sailing.			Steam.		
	Number.	Total tonnage.	Average tonnage per vessel.	Number.	Total tonnage.	Average tonnage per vessel.
		Tons.	*Tons.*		*Tons.*	*Tons.*
Vistula	675	58,000	86.6	43	1,800	44
Oder	2,904	240,000	88.8	102	2,600	30
Elbe	9,000	760,000	84.4	338	13,250	52
Rhine	2,500	426,000	171.0	199	10,876	76
Rhine (including foreign boats)	4,767	870,000	180.0	467	20,000	42
Total (including other water-ways)	17,885	1,625,000	90.0	830	33,000	53

The total tonnage, therefore, of the German river fleet is 1,658,000 metrical tons, or 1,242,000 tons Moorsom. It is equal, in fact, to the merchant navy, the tonnage of which amounted in 1882 to 1,194,000 tons Moorsom, and in 1885 to 1,294,000; but, on the other hand, the mercantile steam navy amounted, in 1882, to 251,000 tons Moorsom, while the corresponding tonnage of the river and canal fleet only reached 33,000 tons. If we take 4 sailing tons as being equivalent to 1 ton steam, which is by no means an overestimate, we arrive at the following results for the German mercantile navy: In 1882, 1,947,000 tons Moorsom; 1885, 2,535,000, Moorsom, while the total tonnage of the river fleet in 1882 was only 1,240,000 tons Moorsom. The comparison, however, is defective on two points. In the first place, in the river fleet are included the coasting boats of Frisches and Curisches Hoff, which have an average burden of at least 10 tons (7.5 tons Moorsom), so that the total strength appears greater than it would be if only the river fleet, properly so called, were taken into consideration. Again, the advantages derived from the use of steam in internal navigation and in maritime transport do not readily admit of any comparison. Steam, when employed in towing on rivers and canals, renders more important services than the actual tonnage of the tugs would lead one to suppose. Consequently the part taken by it in internal transport is of far greater importance than would appear to be shown by the preceding figures

The number of steamers employed in the transport of merchandise, including steam-boats, kedges, and tugs, is distributed as follows over the German water-ways:

Streams.	Number of steam-boats.	Indicated horse-power.	
		Per boat.	Total.
Vistula	21	70	1,442
Oder	75	53	4,025
Elbe	205	109	22,429
Rhine	132	280	37,251

As regards the number of horse-power, the Rhine takes the lead, and this is only natural, seeing that foreign boats are much more frequently found on that river than on the Elbe. On the Rhine, also, it is found expedient to employ boats both larger and more powerful than on other rivers. Taking the average, there are to each horse-power 625 tons carried on the Vistula, 170 on the Oder, 333 on the Elbe, and 190 on the Rhine.

The figures relating to the Oder have only an insignificant value, on account of the defective organization of the statistical service on this river. The comparison between the Elbe and the Rhine turns in favor of the latter. On the Rhine only a very small proportion of goods escapes steam traction, and these are principally stones and minerals descending the stream. On the Elbe there are considerable quantities of goods which do not take advantage of steam traction, going down the river. On the tributaries of the Elbe, Havel, and Spree sailing-vessels and barges predominate.

As regards the nature of the goods carried, the following results, in thousands of tons, are shown:

Articles.	Water-ways of East and West Prussia.	Basins.				Total.	Proportion per cent. of total weight of goods carried.	
		Of the Oder.	Of the Elbe.	Of the Rhine.	Of other streams.		Rafts included.	Rafts excluded.
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Per cent.*	*Per cent.*
Coal, coke, etc.	226	240	1,416	3,600	24	5,506	28.5	32.5
Timber	1,200	260	850	730	225	3,265	16.9	5.1
Stones	128	63	1,400	530	134	2,255	11.6	13.3
Cereals, etc.	143	35	800	890	125	1,993	10.3	11.8
Minerals	.....	2	9	393	8	412	2.1	2.4
Metals	31	58	205	310	31	635	3.3	3.8
Mineral oils	17	27	230	93	14	381	2.0	2.3
Cement, lime, etc.	17	8	720	293	27	1,065	5.5	6.3
Sugar	16	32	489	54	6	597	3.1	3.5
Total	1,778	725	6,119	6,893	594	6,109	83.3	81.0

It is coal and coke (28 per cent.) which constitute the most important part of the transports. On the Rhine these articles comprise almost the half of the total movement (3,600,000 tons); these are also of some importance on the Oder, where, with a total movement of 240,000 tons, these articles represent 27 per cent. of the traffic. On the Elbe they only count for 18 per cent. of the total traffic. Timber takes the second place, but its importance as an article of transport diminishes when traveling from east to west and from south to north. Stone and building materials form a considerable element in the traffic on the Elbe and its tributaries, this being accounted for by the very large consumption in Berlin of building materials, tiles, bricks, etc. Clay, cement, lime, cereals, vegetables, and leguminous plants are carried in very considerable quantities over the water-ways of the basins of the Elbe and the Rhine. Metals (unwrought and wrought) and minerals are

principally found on the Rhine, the Elbe, and the Oder, zinc predominating on the latter. Petroleum and mineral and vegetable oils belong more particularly to the basin of the Elbe.

Taking the trade of each stream, the articles enumerated above are distributed in the following proportions:

Articles.	Water-ways of East and West Prussia.	Oder.	Elbe.	Rhine.
	Per cent.	*Per cent.*	*Per cent.*	*Per cent.*
Coal, coke, etc	10.1	27.0	18.0	47.0
Timber	53.0	30.0	10.9	9.6
Stones	5.7	7.3	18.0	7.0
Cereals, etc	6.4	4.0	10.3	11.7
Minerals		0.2	0.1	5.2
Metals	1.4	6.7	2.6	4.0
Mineral oils	0.7	3.1	3.0	0.7
Cement, lime, etc	0.8	1.7	8.3	3.1
Sugar	0.7	3.7	7.0	0.7

Of articles other than the above there is nothing of any great importance with the exception of colonial produce, tar, pitch, resins of all kinds, asphalt, salted herrings, alcohol, and wool, the two latter articles appearing principally in the basins of the Elbe and the Oder. Coal, timber, stone, grain, earth, minerals, lime, and cement form by themselves more than three-fourths of the total weight of goods carried over the German water-ways, making an aggregate weight of 14,500,000 tons, or a proportion of 75 per cent. Leaving out what is carried by rafts, there remains a total of 12,000,000, or 71 per cent. Iron, metals, petroleum, and sugar count for 10 per cent. in the composition of the remainder of the traffic.

The following statement shows the traffic on the German railways in the year 1886:

	Tons.	Per cent.
Coal and coke	51,888,000	48.5
Timber	6,220,000	5.8
Stone	8,101,000	7.5
Grain	6,704,000	6.2
Minerals	4,376,000	4.0
Iron	6,766,000	6.3
Other metals	292,000	0.3
Petroleum, oils, etc	700,000	0.6
Cement, lime, etc	3,085,000	3.8
Sugar, molasses, etc	1,537,000	1.4
Total	90,665,000	84.7

The total weight of goods carried over the German railway system in 1884 amounted to 107,000,000 tons, or five and a half times more than the whole water-carriage of the country.

Charles von Scherzer, in the work to which we have previously referred, namely, the "Economic Life of Nations," gives as the total amount of traffic on the English water-ways, the development of which does not exceed one-sixth

of the railway system, a total of from 30,000,000 to 35,000,000 tons. For the United States the figure would be about 25,000,000 to 30,000,000 tons, and for France about 20,000,000 tons. A comparison, therefore, of the water and railway transports would be more favorable as regards the former in Germany than in England, and the actual result would be almost the same in France as in Germany. M. von Scherzer gives as the actual length of the navigable waters of England 2,980 miles, and the length of the French water-ways as 2,794; the latter figure, however, does not at all agree with the extent, according to the "Guide officiél de la navigation intérieure," this publication giving the length of the rivers as 4,956 miles and of the canals, 2,955 miles, making a total of 7,911 miles. As, however, M. von Scherzer's figures only relate to the water-ways actually available for navigation, it is only necessary to take into consideration those rivers and canals in Germany which are regularly navigated. The length of these ways is about 2,484 miles, with a traffic of at least 18,000,000 tons. In England, therefore, there would be an average traffic of 9,662 tons per mile, in France 7,246 tons, and in Germany the same amount. In the latter country 126,000,000 tons of merchandise are carried by water and rail, the proportion being 15.2 per cent. to 84.8 per cent., respectively, while a considerable part of the traffic has employed both methods of transport. This is particularly noticeable in the mining district of Ruhrort towards the south of Germany, and it appears to be the general rule with the coal cargoes, exception being made of the Sarre coal, which is almost invariably shipped direct without passing over the railway system.

It would be by no means an overestimate to fix at from 8,000,000 to 9,000,000 tons the traffic employing both water and rail. On the Rhine alone over 5,000,000 tons of merchandise are carried in this way. A reference to the subjoined table will show the distribution of the under-mentioned articles over the railways and water-ways, the articles in question representing a proportion of 83.3 per cent. of the transports by water and 84.7 per cent. of those by rail.

Articles.	Total quantity carried.		Proportion to total traffic.		
	By water.	By rail.	Water-ways.	Rail-ways.	Total.
	Tons.	*Tons.*	*Per ct.*	*Per ct.*	*Per ct.*
Coal, coke, etc	5,506,000	51,888,000	4.35	41.18	45.33
Timber	3,265,000	6,220,000	2.59	4.93	7.52
Stone	2,255,000	8,101,000	1.79	6.43	8.22
Grain, vegetables, etc	1,993,000	6,704,000	1.58	5.32	6.90
Minerals	412,000	4,376,000	0.32	3.47	3.79
Iron and metals	635,000	7,058,000	0.50	5.60	6.10
Petroleum, oils, etc	381,000	700,000	0.30	0.55	0.85
Cement, lime, etc	1,065,000	4,085,000	0.84	3.24	4.08
Sugar and molasses	597,000	1,537,000	0.47	1.21	1.68
Total	16,110,000	90,669,000	12.74	71.93	84.67

The goods carried over the various railway systems, amounting in the aggregate to 107,000,000 tons, are distributed over a net-work of 22,000 miles, that is an average of 4,864 tons per mile. The traffic on the water-ways, amounting to 19,000,000 tons, spread over an extent of 3,384 miles, gives an average of 5,623 tons per mile. Each ton of goods accomplishes on an average a journey of about 87 miles over the rails.

Inland navigation statistics do not show the length of the various distances traversed, but there appears to be a consensus of opinion that these distances are considerably longer than on the railways. On the Rhine, however, the traffic may be approximately estimated and followed. It comprises (1) the traffic between the Dutch ports and Germany; (2) the traffic between the lower and the middle part of the German Rhine; and (3) the local traffic between the small intermediate ports. This last branch, however, is altogether without importance, and may be left out of consideration. The traffic between Holland and the German ports embraces 4,500,000 tons, and the shortest transport effected is that from Ruhrort-Duisburg to Rotterdam, a distance of 133 miles. Very considerable quantities of merchandise are carried from Rotterdam to Mayence and Mannheim, and it is by this route that the important grain trade of Mannheim and Ludwigshafen is carried on. The shipments from the ports of the Lower Rhine are partly consigned to Dutch or Belgian districts and partly to Mayence, Gustavsburg, Mannheim, and Ludwigshafen; the intermediate districts—Cologne, Coblenz, etc.—retaining very little of the traffic. The greater part, therefore, of the transports on the Rhine are effected over an extent of from 125 to 350 miles, of which 125 miles are comprised within German territory.

The 3,250,000 tons of coal shipped from the ports of Ruhrort, Duisburg, and Hochfeld in 1884 comprised 1,375,000 tons for Holland and 800,000 tons for Mayence and Mannheim. It follows, therefore, that there was an average distance of 120 miles traversed on German waters, while, on the other hand, the railways carried goods to a distance varying between 5 and 30 miles, or an average of 17 miles. On the Elbe the comparison is equally in favor of water transport. From the Austro-German frontier to Hamburg the distance is 404 miles, from Hamburg to Dresden 360 miles, from Hamburg to Magdeburg 186 miles, and from Hamburg to Berlin 248 miles. A considerable proportion of the goods passing the frontier descends the Elbe as far as Hamburg; 366,000 tons of lignite from Bohemia have penetrated as far as Magdeburg (217 miles), and 211,000 tons to the Havel (248 miles). In the contrary direction almost all the consignments from Hamburg (1,400,000 tons) were in the direction of Berlin and the Oder, or towards Magdeburg, Dresden, and Bohemia.

A considerable proportion of the traffic of the Havel and the Spree was effected over very short distances. Building materials which are sent to Berlin come, for the most part, from brick fields situated at a distance from that city of from 30 to 90 miles. In the same way large quantities of timber taken by Berlin come from neighboring districts, and the same may be

said of the grain, vegetables, seeds, coal, coke, etc., forwarded to that destination. The average distance that goods are carried on the basin of the Elbe may be approximately estimated at 124 miles, while the distance is considerably greater on the basin of the Oder, since the principal traffic is between Breslau and Stettin (347 miles), Breslau and the basin of the Elbe, and Stettin and Berlin (130 miles). For water-carriage, therefore, the average difference traversed may be taken as at least double that of railway transport, which is in itself a proof that even the nature of the navigable ways renders them more suitable for long journeys.

It results from the foregoing that from the point of view of the distance traversed, inland navigation in Germany is of far greater importance than the tonnage returns and the comparison of these returns with those of the railways would appear to show.

The following tabular statement shows a comparison of the two modes of transport for a certain number of principal cities:

Cities.	Number of inhabitants.	Goods carried.			Number of tons per head of population.
		By rail.	By water.	Total.	
		Tons.	*Tons.*	*Tons.*	*Tons.*
Berlin	1,200,000	3,504,000	3,348,000	6,852,000	5.71
Breslau	270,000	1,237,000	350,000	1,587,000	5.88
Hamburg	410,000	1,191,000	*3,221,000	4,442,000	10.7
Magdeburg (including Buckau and Neustadt)	165,000	1,650,000	1,118,000	2,768,000	16.7
Dresden	220,000	†1,411,000	534,000	1,945,000	8.8
Bremen	112,000	776,000	*184,000	960,000	8.5
Ports of the Rhine (Ruhrort, Duisburg, and Hochfeld	70,000	5,427,000	4,107,000	9,554,000	136.0
Cologne (including Deutz)	160,000	1,320,000	314,000	1,634,000	10.0
Mannheim and Ludwigshafen	75,000	1,776,000	2,041,000	3,817,000	50.0
Leipzig	160,000	1,675,000	.....	1,675,000	10.0
Hanover (including Linden)	150,000	912,000	.....	912,000	6.0
Munich	230,000	1,252,000	.....	1,252,000	5.4

* Not including sea tonnage.

† Exclusive of arrivals and departures by rail from Dresden and Breslau.

Deduction being made of places such as the ports of the Rhine, Ruhrort, Duisburg, Hochfeld, Mannheim, and Ludwigshafen, which considerably exceed the average by reason of the traffic being entirely in transit, it will be seen that the differences are not of any considerable extent. Magdeburg heads the list, this being an important market; the other cities varying between 5 and 10 tons per inhabitant. It can not be said that places like Hanover, Leipzig, Munich, and Bremen, which almost exclusively, or at any rate most frequently, use the railways, compare, from a general commercial point of view, unfavorably with those which are fortunate enough to have water communication. Relatively to the goods traffic, Leipzig surpasses Berlin, Breslau, and Dresden, Munich alone remaining in the background, while Hanover keeps on a level with Berlin and Breslau.

As a consequence of the comparison of the traffic by rail and water, it may be laid down as a general principle that there is no essential difference

between the two modes of transport as regards the value of the articles carried. Both by rail and water goods of small value preponderate, but this preponderance is much more marked on railways than on water-ways. The latter are not limited in their choice of goods, as is generally supposed; soft goods in bales and articles of value form no inconsiderable part of their transports. The traffic on the Rhine in grain, vegetables, flour, etc., in spite of the favorable conditions under which those goods are carried on German railways, increased from 156,000 tons in 1872 to 810,000 tons in 1883, thus following an ascending scale much more rapid than that which would result normally from the increase of the population in the industrial centers traversed. A similar increase is also observable at the port of Hamburg. During the period comprised between the years 1851–'60 the annual arrivals at Hamburg by the Elbe averaged 206,000 tons of goods, of which 18,700 were in bales, or a proportion of 9 per cent. The departures from Hamburg during the same period averaged 300,000 tons, of which 56,000, or 18 per cent., were in bales, making, together, a total of 506,000 tons, of which 74,700, or 14.7 per cent. were in bales. In 1885 the arrivals amounted to 1,234,000 tons (666,000 tons in bales, or 54 per cent.), and the departures to 1,180,000 tons (474,000 tons in bales, or a proportion of 40 per cent).

It will be observed, then, that the transport of goods in bales, most frequently valuable articles, has shown an increase three times greater than that of the whole river trade of Hamburg. Among the more valuable goods carried by water may be cited mineral oils, and it is to the facilities given, thanks to the Elbe, to the transport of these products that Hamburg has taken the place of Bremen, formerly the first in Germany and in the European continent for petroleum. In 1884 the shipments of mineral oil from Hamburg exceeded by 17,000 tons those from Bremen. In certain ports it happens that valuable goods more frequently take advantage of the water-ways than the railways. Berlin, for instance, received, in 1885, 150,000 tons of cereals and vegetables by rail and 250,000 tons by water; 760 tons of rice by the former, and 2,400 tons by the latter. In the same way Mannheim-Ludwigshafen received, in 1884, 5,000 tons of mineral oil by rail, and 24,000 tons by water and 200 tons of rice by the former and 4,500 by the latter. These examples may be multiplied, and they are sufficient to show (1) that the water-ways, contrary to the general opinion, participate to a considerable entent in the transport of costly merchandise; (2) that this participation has, up to the present, been steadily increasing; (3) that this fact is not to be accounted for solely by the increase in general traffic but by the preference accorded to water-carriage, as it offers greater economy than any other mode of transport; and (4) that this diversion of traffic applies to those articles which have the longest distance to traverse.

The increasingly important part taken by German navigable ways in the transport of merchandise is due partly to the action of the state and partly to the natural causes of expansion. The action of the state has been manifested in two ways; by the execution of improvement in the water-ways and

by the erection of ports and quays at the most important points. The many millions that the German states, commencing with Prussia, have devoted during the last fifty years to the improvement of rivers and streams have had a result the more advantageous as various legislative measures have been passed with a view to lighten the burdens imposed upon river and canal navigation; among others article 54 of the constitution, which removed the taxes hitherto levied upon the fleet for the interest and repayment of the capital engaged.

The tonnage of the river and canal fleet increased in the short space of time between 1877 and 1882 from 1,377,000 tons to 1,658,000 tons; the number of steam-vessels, which in the former year amounted to 463, rose to 830 in 1882, this being the latest year for which any reliable information on this point is available. The average tonnage of the sailing-vessels was as follows for 1872 and 1882: On the Oder, 77 and 89 tons; on the Elbe, 75 and 84; and on the Rhine, 130 and 171 tons.

The facilities afforded to the handling of goods have counted for much in the development of the traffic of the water-ways. By lengthening to a considerable extent the ports and quays, and by erecting powerful machinery, the delays of loading and unloading have been sensibly diminished. The three ports of the lower Rhine, Ruhrort, Duisburg, and Hochfeld, having a length of quay of about 50,000 feet, and abundantly supplied with machinery for loading, steam-cranes, weighing machines, and coal shafts, have an annual traffic of from 4,000,000 to 4,500,000 tons. On the Elbe there are a larger number of ports furnished with the necessary machinery, but these ports have not the same importance as those of the Rhine. Dresden, Riesa, Wallwizhaven, Magdeburg, and Hamburg enjoy these advantages, and are directly connected with the railways. At Hamburg, the most important port on the Elbe, it is of more importance to assure the relations between the sea and river navigation, the requirements of which are very different, than to assure the communications between the river and the railways. The quays and depots of Berlin are quite insufficient for commercial requirements. On the Oder much has been done to place the river in communication with the railway. The most important work is to be found at Breslau, where machinery constructed on the model of that in the Rhine ports has been erected. All these improvements have been effected either by the state, by the communes with state aid, or again by private companies. On the other hand the employment of steam has in some measure been instrumental in regenerating the river and canal navigation. With the old sailing boats the average distance covered per diem was 19 miles at the most, taking into account the delays occasioned by contrary minds. The steam towage on the Rhine is effected at the rate of 3 miles an hour up and 6 miles down, or an average of 4½ miles, making for a navigation of fifteen hours 67½ miles, that is nearly four times the old speed. The steam carrier has a speed of 6 miles an hour up and 9 miles down, or an average of 7½ miles; it covers a distance of from 112 to 124 miles per day. If the tug boat be

assimilated to a regular goods train, and the steam carrier to a direct goods train, it will be found that the speed at which inland navigation is effected is sensibly inferior to that of the railway. A goods train, even when heavily loaded, covers a distance of from 180 to 250 miles in twenty-four hours, while a direct goods train might even cover double this distance. As regards delays in the delivery of goods, canals and rivers compare very favorably with the railways; river navigation is concentrated on a certain number of ways, over which a heavy traffic passes, and is effected between a limited number of important ports, sufficiently distant one from the other. The river and canal navigation, moreover, is but little obliged to stop at night. It is far different with the railways; even on those lines on which the traffic is heaviest account must be taken of the frequent stoppages at the intermediate stations, for loading and unloading goods, coupling or uncoupling trucks, changing engines or men, taking in coal or water, and shunting to allow passenger trains to pass. These different circumstances considerably lengthen the duration of journey by rail. Transport by rail then, as compared with that by water, does not enjoy the advantage that the greater rapidity of traction would assure to it.

The facts which we have enumerated above have in great measure contributed to the development of steam navigation, and have produced this result, that instead of being completely crushed by the competition of the railways, the river and canal fleet has succeeded in taking from the latter a considerable portion of the traffic. The rapidily extending employment of steam as a motive power has given to the traffic of the Rhine and Elbe its present importance, and has stimulated the development of that of the Oder. Where navigation is effected principally by sailing and rowing boats, as, for example, on the Spree, and the Havel, only raw materials of small value are carried, such as earth, stone (wrought or unwrought), lime, etc., goods which even going down the Rhine are seldom carried by steam-vessels. Not only has navigation gained in speed, regularity, and continuity by the employment of steam, but it has also made considerable progress from the point of view of cheapness. The initial expenses of building, as well as the working expenses, interest, and repayment of capital, are distributed over a much greater tonnage, so that the actual ton mile corresponds to smaller expenditure for steamers than for sailing vessels. Again, thanks to the use of steam, a vessel can accomplish twice or even three times as great a number of voyages; it may also have much greater carrying capacity; this increase of tonnage, added to the facilities afforded to the loading and unloading of goods, has had the effect of reducing freights by one-fourth, and in some cases by half. The position is the same for maritime navigation, and the fall in the rates of freight has even been accentuated by the stagnation of trade. Of one fact there can be no doubt, that is, that freights have sensibly diminished since the development of steam navigation.

The daily expenses are in the case of the largest steamers at the rate of about 6 pence per ton register. As these steamers cover a distance of from 190 to 250 miles a day the expenses of transport, properly so called, amount to about .03 of a penny per ton and per mile, a figure which, taking into account the stoppages at the various ports, comes to .05 of a penny. Between North America and Germany, a distance of from 3,100 to 3,730 miles, a ton of grain is carried for 10 shillings, or .04 of a penny per mile. In some years, however, the cost is double.

Coal freights between England and the North Sea (434 miles from the east coast of England and 870 miles from the west) rule at about 4*s.* 10*d.*, or .12 of a penny per ton and per mile. Between the ports of the North Sea, the Prussian and Russian ports of the Baltic (810 and 1,500 miles), they amount to 5 shillings at the most, or from .04 to .08 of a penny per ton per mile.

The fact that river and canal navigation uses the navigable ways free of cost, and has only to provide itself with the means of traction, places it in a position to compete favorably with the railways, provided always that the latter are desirous of paying a dividend. Inland navigation has this in common with the maritime navigation, that the rates of freight are calculated on a much lower basis for long than for short distances; that the possibility of rapidly loading and unloading has a considerable influence on the question, and, finally, that the prospect of a return freight considerably lowers the cost of transport. Consequently the rates attain the minimum when it is a question of two important commercial centers between which there is a regular traffic, and which are supplied with the necessary machinery for loading and unloading. In the matter of river navigation, the time necessary for the transport and for loading and discharging is a very important factor, and its duration exercises a considerable influence upon the rates of freight. As regards steam navigation the rates can be fixed on a firm basis, and deduction being made of free competition to which the different river and canal navigation is subjected, it is the consideration of a return freight which is the controlling element in the variation in the rates of transport by steam between any given ports.

In determining the rates for river and maritime navigation it is not necessary to take into consideration the value of the goods carried, the most complete utilization of the capacity of a vessel being the principal point, it matters little whether it be with coal, sugar, or grain with which it is loaded.

The more or less dangerous character of the goods which plays in maritime navigation a very important part, and which influences in a marked degree the conditions of assurance, is only a matter of very secondary consideration in river and canal transport. Coal, which on long sea voyages is sometimes a dangerous cargo, by reason of its inflammable nature, is not considered more dangerous for river than for railway transport, and the same may be said of petroleum. If internal navigation applies higher rates to articles of value which are in other respects susceptible of easy transport, this

is owing to causes essentially commercial. It is that in order to attract this class of goods there is no necessity to make any concessions in the rates of freight. Railway competition is not formidable, and the river and canal fleet, desirous of keeping down the cost of transport of heavy goods, is only glad to be able on occasion to look for and find its compensation in other articles. Finally, river and canal navigation offer three methods of transport with different rates, as follows:

(1) Transport by steam carriers.

(2) Transport in barges towed by steam.

(3) Transport by sailing-ships.

The first is on an average from twice to four times dearer than the second. Navigation by sailing-ships is partly dearer and partly cheaper than towing. It becomes cheaper when it is a question of carrying down the rivers goods of little value which have not to make long journeys, and that is because the use of steam would not prove sufficiently remunerative on account of the shortness of the distance to be traversed, of the current, and the inadequacy of the machinery for unloading. It is, on the other hand, dearer when navigation is effected up stream. As regards the second mode of transport, account must be taken of the composition of the train of barges, and the nature of the boats towed, their dimensions, and the nature of their construction, whether with or without decks, of iron or of wood. By reason of the guarantees of solidity and security afforded by their construction, iron vessels are able to command a higher rate of freight, and moreover, they are better managed.

As we have already observed, the dimensions of the vessels is an important factor in determining the cost of towage. A limited number of large vessels admits of the realization of a more important increase of carrying power than a large number of little boats. An iron lighter of 500 tons burden pays at the most per ton and per mile two-thirds of the cost of towage that a wooden vessel of 100 tons would have to pay.

As far as it is possible to judge, with the perpetual fluctuations in the rates of freight, the inland navigation rates are established, as nearly as possible, according to the following scale:

(*a*) Goods of every description in bulk, loaded on boats and towed in trains, .18 to .29 of a penny per ton and per mile.

(*b*) Goods in bales, towed in trains, from .06 to .09 more, or .24 to .38 of a penny per ton and per mile.

(*c*) Goods in bales carried by steam carriers, .39 of a penny to 1*d.* per ton and per mile. On canals and canalized rivers the tariff may be taken as follows: For class *a*, from .23 to .34 of a penny; for class *b*, from .30 to .48 of a penny, while as regards the third mode of transport this is rarely employed on these water-ways.

As compared with this tariff, which is comparatively simple with its two or three categories, the goods tariffs of the railways appears very complicated, owing to the number of different classes. In addition to the regular tariffs

for the quick service of trains, there are two general classes of wagons and four special classes, and, moreover, each line of railway has a number of special tariffs. The rates according to the general tariffs vary between .35 of a penny and 4¼*d.* per ton and per mile; that is from two to four times higher than the rates by water. In the special tariffs the rates range from 2.36*d.* per ton and per mile (for goods in bales) to .57 of a penny (exceptional rates for loads of 10 tons and above). That which constitutes a considerable advantage from a tariff point of view in favor of the navigable ways is the circumstance that these tariffs are not influenced by the value of the goods carried. In the same class will be found such articles as raw iron, minerals, cereals, and petroleum, while for the same description of goods carried by rail the rates would vary from .41 of a penny to 1.16*d.* per ton per mile.

Taking into consideration the fact that the transport of the mass of goods, including heavy bales, can be effected by river navigation at prices varying between .18 and .29 of a penny and by canal and canalized rivers at from .24 to .38 of a penny, it is not surprising that for valuable goods a preference is shown for water over railway transport. The transport of the mass of goods of little value costs on the average by water only half what it does by rail, while on the other hand goods belonging to the class of special wagons, such, for example, as petroleum and refined sugar, or to the special tariff No. 1, such as cereals, and the natural water-ways carry them at about a third or a quarter of the price at which they would be conveyed by rail. Artificial water-ways carry the mass of cheap goods for two-thirds of the regular railway tariff and valuable goods for a third or a half of this tariff.

There is, however, one circumstance which prejudicially effects the cheapness of water transport, that is the necessity which almost invariably exists for the conveyance of the goods for a certain distance over rail or road. In some cases the possibility of carrying the goods up to the very gates of the warehouses themselves is in itself a sufficient reason for the preference to be shown to railways. Again, in the case of coal carried from the Ruhr in the direction of Holland. The places to which it is carried are easily accessible to the river fleet, particularly Rotterdam, Amsterdam, Dordrecht, etc. The freight is low, and, including even the journey by rail, the total cost of transport does not amount to more than 3*s.* per ton, while by rail all the way the cost would be at least 4*s.* 2*d.* per ton, and yet the railways monopolize the greater part of this traffic, owing to their punctuality, particularly in the case of the coal intended for exportation by sea.

The natural water-ways, which, during the greater part of the year, enjoy the advantage of a depth of water sufficient for the navigation of steam-boats and tugs, are in a position to favorably compete with the railways as regards cheap transport, and their superiority increases with the value of the goods carried and the length of the distance traversed. The advantages of artificial canals and canalized rivers, while still great, are rather more restricted. The principal cause, however, of the dearness of transport by rail lies in the fact that the railways must not only cover their cost of working, but

must realize sufficient to pay the interest on the capital engaged. The movement of passengers is barely sufficient to realize an excess of receipts over expenditures, and it is therefore to the goods traffic that the railways look for their profits. For the German railways, the capital of which represents a value of more than £480,000,000, a sum must be found annually equivalent to that which per ton mile carried would represent an expenditure of .40 of a penny, or a sum nearly equal to the cost of traction. To lower this tariff would be to run the risk of serious complications and a certain deficit. Moreover, it would be dangerous to recommend the adoption of measures tending to the augmentation of the cost of water transport through the medium of a navigation tax with a view to a reduction of the advantages of these competing lines. On the Rhine and the Elbe the treaties in force would be a bar to the adoption of such a measure as the above, which, on the other water-ways, would not only prove vexatious, but, moreover, useless. What on the other hand would be a legitimate policy would be not to further undertake on the navigable ways any works other than those of real importance, and the execution of which would insure a sufficient return upon the capital engaged. The cost of transport constitutes an important element in the composition of prices. One of the most important articles, namely, iron (unwrought), has from 20 to 30 per cent. of its cost price represented by the expenses incurred in bringing up coal, ore, and lime; and yet the metallurgical industry is hardly ever found elsewhere than in the vicinity of coal fields and ore beds. It is the same thing with coal, the intrinsic value of which is often lower than the cost of transport, by reason of the exceptional situation of the two basins of the Ruhr and Upper Silesia. It may be taken generally that German coal can be carried a distance of from 110 to 190 miles for 7*s.* 4*d.*, and 310 miles for 12*s.* 2*d.* The railway tariffs fix, for the transport of cereals over an average distance of 500 miles, the rates at from 43 to 50 shillings per ton, or about 30 per cent. of the intrinsic value at the place of production. According to the above one would be almost led to believe that a diminution in the cost of transport would be an economic advantage of the very highest importance, the realization of which should be striven for even at the cost of considerable sacrifices, and yet this is not absolutely the case. Before everything, it is necessary to inquire if the benefits resulting from a lowering of the rates would have a general character, or if, at least, this diminution would benefit the majority of the national interests. If this is not so; if it is not to the advantage of the many, but only of certain groups, circles, and regions, the gain to the one would be the loss of the other, and the economic advantages would be considerably diminished. It may even happen that the disadvantages resulting from it would be greater than the advantages obtained, and that the displacement of commercial currents would have for certain districts disastrous effects, which would not be compensated by the benefits gained by others.

The excessive production of industrial districts has determined the currents of exportation which have brought about the depreciation of nearly all

the agricultural or manufactured products. Maritime navigation has also borne its share in effecting the result to which we have referred. It has, in consequence, found itself under the necessity of giving up the enormous profits that it has been in the habit of making, and of carrying goods at cheap rates hitherto unknown. On the other hand, the minimum tariffs of maritime navigation encourage exportation, and foreign industrial products inundate the markets, where they strive for the first places, forcing the national producers, if they desire to still supply their own consumers, to sell their products at a lower rate than that quoted by their rivals. Those engaged more particularly in the industries of agriculture and sylviculture have followed the example of the industrial nations, and have consigned to the latter their surplus cereals, cattle, and timber in such quantities that the actual requirements are often exceeded; the prices have fallen, and the agricultural and sylvicultural industries of industrial nations have suffered keenly from the competition.

It will be seen, therefore, that the diminution in cost of transport may, under certain circumstances, be productive of more harm than good. In Germany it certainly has had the unfortunate result of entirely nullifying schemes for the effectual protection of national labor.

If we consider the movement of goods carried in one direction or another on the Rhine, Elbe, or Oder, it is difficult to come to any other conclusion than that the traffic of these navigable ways owes a part of its success to circumstances absolutely opposed to the general policy in the matter of exchanges. In 1884 there were brought into the states of the Zollverein 2,775,000 tons of cheese, barley, rye, oats, maize, and vegetables, of which 1,575,000 tons, or 56 per cent. of the total importation, came by the Rhine, the Elbe, and the Oder to Emmerich, Hamburg, and Harburg by the Finow and Schandau Canal. By the Rhine and the Elbe these products were sent away to an extent representing a proportion of 44 per cent. of the total exports.

As regards timber for building purposes 1,946,000 tons came into the Zollverein in 1884 and 593,000 tons left it. The actual part taken by the navigable ways in this traffic can not be absolutely determined from these figures, as some considerable quantity of goods were simply in transit. It may, however, be estimated that the quantity entered by water amounted to 1,126,000 tons, and 218,000 were exported by the same route. The principal imports have been effected by the Vistula (524,000 tons) and the Niemen (500,000 tons), and the exports by the Rhine (124,000 tons) and the Elbe (68,000 tons). The Niemen has principally carried timber in transit, while the Vistula, on the contrary, has imported the greater part of these cargoes. They principally come from Poland and Galicia, while only a small proportion reach Stettin and Hamburg for export by sea. Of the total imports of timber, amounting to 1,900,000 tons, the navigable water-ways count for about a third, the rest being brought by sea, only 300,000 tons being accounted for by rail. The imports of timber by water, therefore, represent

double the quantity of that brought by rail, while only considering, as regards this article, the general traffic by navigable water-ways and railways, 3,265,000 tons for the former and 6,220,000 for the latter, we find the proportion absolutely reversed.

The imports and exports of coal and coke during the year 1884, by water and by rail, was as follows:

Articles.	Imports.	Exports.	By water.		By rail.	
			Imports.	Exports.	Imports.	Exports.
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*
Coal	2,296,000	8,816,000	942,000	2,262,000	374,000	6,662,000
Coke	123,000	670,000				
Lignite	3,466,000	.....	1,300,000	.....	1,533,000	.....
Total*	5,885,000	9,486,000	2,242,000	2,262,000	1,907,000	6,662,000

* The discrepancy between the total of the entrances and of the clearances, and the amounts brought and dispatched by water and land, may be accounted for by the fact that Luyanburg, which is taken as forming part of the Zollverein, is at the same time considered, from a commercial point of view, as a foreign country.

From the above it will be seen that the navigable water-ways have borne the largest share in the importation of coal and coke. Taking, however, the general traffic, the railways have carried ten times more coal and coke than the water-ways, the actual figures being 51,000,000 tons by the former, and 5,000,000 by the latter. The largest imports are effected by the Elbe and the Oder, 40,000 and 430,000 tons respectively, and the Vistula 170,000 tons. The Rhine is employed for the exports to the extent of 2,190,000 tons. In the export of iron the railways count for nine-tenths of the unwrought and five-sixths of the wrought, while the water-ways retain the greater part of the import trade in ores and pig-iron.

For many and valid reasons the navigable ways are more frequently employed for imports than for exports, and looking at the question from the standpoint of the protection of national industry, they are productive of more harm than good. For other industries, the effect they exercise from an export point of view is more favorable; for example, the sugar industry utilizes them for their consignments abroad almost in the same proportion as the railways. Zinc and lead frequently take advantage of the water-ways for the carriage of their exports, and it is evident that there are many other industries which derive considerable advantage from the cheapness of the transport and their favorable position upon the water-ways.

And yet, in face of the statistics we have quoted, it is almost impossible not to recognize the fact that the general opinion as to the value of water-ways as an instrument of wealth proceeds partly from erroneous ideas, and that the influence attributed to this mode of transport, not only from the point of view of the facilities accorded to national production, but also of the outlets open to commerce, is not always justified by facts. There is

undoubtedly some show of reason in the numerous arguments at present put forward in favor of the advantages to be derived from the various canals, the execution of which is so anxiously demanded. The establishment of these new ways ought, we are told, to reduce the cost and selling prices to a rate impossible to be attained by the railways, and thereby would powerfully stimulate the national industry. Undoubtedly the canal from the Baltic to the Ems, with a junction to the canal from the North Sea to the Rhine, as well as the canal from the Oder to the Spree, would be productive of all the advantages attributed to it, and even without detrimentally affecting the higher interests of the country. By the first of these ways the basin of the Ruhr would very speedily find the facilities for placing goods on the German markets of the littoral, and also in the Russian and Scandinavian ports, and for export generally greatly increased. And, besides, all the operations of import and export, as regards the industries of the Ruhr, would be effected by German in preference to foreign ports. The canal from the Oder to the Spree—the national result of the improvement of the Oder—will give to the industries of Upper Silesia the navigable way of access to Berlin, the want of which has been so long felt.

But, on the other hand, the advantages anticipated from the establishment of a number of other ways are either insignificant or absolutely counterbalanced by such serious economic disadvantages to such a degree that one is forced to seriously inquire whether it is for the general interests that these works should be undertaken, and, if undertaken, whether it should be with state aid. In this connection we may mention the canalization of the Moselle from Metz to its mouth, a canalization ardently desired by those interested in the industries of the Ruhr. The work would have for its object the transformation of a river which suffers particularly from an insufficiency of water, and the rendering of it capable of accommodating the largest Rhine boats, even those with a burden of 500 to 1,000 tons and having a draft of water of from 5 to 6 feet. The transformation would be effected by the aid of important works, consisting principally of locks; in fact, the proposal is to distribute thirty-two locks over a distance (in round numbers) of 200 miles. It would appear, however, that the hopes founded by the industries of the Ruhr upon the canalization of the Moselle are illusory, and, by reason of the doubtful success of the project, the Government would do well to seriously consider whether thé national finances should be devoted to such an enterprise.

In the bill of July 9, 1886, respecting the construction of fresh water-ways, it was the junction of the Rhine with the Weser and the Elbe and the improvement of the Oder up towards Breslau that was in question. In the first project it was proposed to establish, starting from the canal from the Rhine to Ems, near Munster, a junction towards Bremen and Hamburg; and another way, separated from the first below Osnabruck, passing above Hanover and rejoining the Elbe in the environs of Magdeburg. The im-

provement of the Oder towards Breslau would consist in the canalization of that part comprised between Breslau and Kosel (about 93 miles), which would bring the industries of Upper Silesia nearer to Breslau by 74 miles.

As regards the question of the importance of artificial water-ways, there is very little doubt that as soon as these latter cease to be short links, intended to connect between themselves the different systems of natural water-ways (for example, the junction of the Oder with the Havel and the Spree), but constitute important lines, with their own individuality, they can not compete, as regards the cheapness of transport, with the natural water-ways, even if the state be disposed to cover, by the imposition of taxation, the cost of maintenance.

The natural lacuna in the matter of traffic by water would be less satisfactorily filled by the opening of an artificial way than by the establishment of a railway. Moreover, artificial ways have a much greater difficulty in adapting themselves to local circumstances. As a matter of fact, the principal sources of traffic—the industrial regions with their mines and minerals—are more frequently far from being favorable to the establishment on the spot of navigable ways. Traffic by water has, therefore, a natural propensity to concentrate itself in certain regions even more so than the traffic by rail.

To sum up, public opinion, in its infatuation for canals and improvements of natural water-ways, does not take sufficiently into account the true influence that navigable ways may exercise upon the economic condition of the country. The happy effects that one has a right to expect from the opening of these ways upon the development of public prosperity are frequently nullified by the obstacles placed in the way of the production of certain basins. It may be laid down as a general rule that it is rather importation than exportation that is benefited. These two circumstances, properly appreciated, considerably diminish the economic value of a certain number of water-ways, the execution of which appears to be so ardently desired.

RAILWAY PROJECTS IN ECUADOR.

In 1885 the Government made a contract for the construction of a section of railway from Chimbo to Sibambe, 50 miles in length, an extension of a railroad built some fifteen years ago by the Government from Yaguache, the head of navigation of a river of the same name, to Chimbo. For the construction of this extension the Government granted to the contractor, for twelve years, the income derived by it from the monopoly of the sale of salt in the Republic, amounting to 200,000 sucres* annually, and the right to the use for his own benefit of the whole line for twenty-five years, he agreeing to complete the extension in four years. This year the contractor assigned his contract to a company of this city known as the Railway and Public Works Company, which is now engaged in grading the roadway. Only a few miles have been graded so far. The Government has no share in the management

*A silver coin worth about a dollar in United States gold.

of any part of the road. The direction from Yaguache to Chimbo is north, and from Chimbo to Sibambe east. From Yaguache, 25 miles by northeast of this city, to Chimbo, the road passes through a fertile country, only sparsely populated, the chief products of which are sugar and rice. Several large sugar estates and a few small cocoa plantations are on the line of the road. The population is almost exclusively agricultural. From Chimbo to Sibambe, the terminal point contracted for, the road will pass through a mountainous region for the greater part of the distance, reaching at Sibambe an elevation of 7,500 feet. The country to be tapped by this section produces cattle, wheat, barley, and in fact most of the cereals and vegetables of the temperate zones, but the population is sparse, composed mostly of Indians, who are very poor and ignorant, though peaceable and laborious. The land is fertile and capable of yielding abundant harvests.

Last year the Government granted a concession for a railway from Duran, a point across the river and nearly opposite Guayaquil, to Yaguache, 14 miles west by land, to connect at that place with the road to Chimbo. For this the contractor is to receive from the Government 20,000 sucres a mile, and to enjoy the free use of the road for twenty years, at the expiration of which term it is to become the property of the Government; until then the Government will have no share in its management. Work has been progressing for the past year, and it is expected that the road will be open for traffic in December next. It runs through a low, flat region of country, devoted principally to the pasture of cattle and abounding in tropical fruits. The population is sparse and composed mainly of Cholos, a mixture of white and Indian, who bring the vegetable and fruit supplies to this city.

With the completion of the two lines or sections there will be a railway of 96 miles, connecting Guayaquil and Sibambe (the latter a town of 2,000 or 3,000 inhabitants), and from thence there is a wagon road north to Quito, but it is much out of repair, and no wagon, I believe, has ever passed over it. There is some remote probability of an attempt, after the line reaches Sibambe, to continue the railroad to Quito.

A concession and subvention were last year granted for a railroad from Bahia de Carequez, a port on the Pacific, to Quito, about 280 miles east of the proposed line, the person undertaking to build the road to receive the net income of the custom-houses at Bahia and Monta, amounting to 70,000 sucres a year, for ninety-nine years, and to have the use of the road for the same period. The Government is to have no share in its management. For some 30 miles from Bahia eastward the projected road is through a level, flat country. Afterwards it enters the Andes and passes through a mountainous region, almost uninhabited. Some little grading has been done near Bahia, but it is thought to be a very difficult and costly enterprise and one not likely to be carried to a successful termination, with the wholly inadequate means at the command of the contractor. —GUAYAQUIL, ECUADOR, *July 27, 1888.*

OWEN McGARR,
Consul-General.

LABOR COST OF LADIES' BUTTON BOOTS IN EUROPE AND AMERICA.

Whoever has gone through a Massachusetts shoe factory with open eyes to observe its workings surely leaves it with a useful lesson learnt. Especially so when in his younger days he made good use of the easy opportunity and watched the shoe-maker at his daily work. He will remember how the latter beat out his sole leather, cut his soles, the heels, and, from a well-selected side, the uppers, etc. After all the preliminary work had been done, how the twine was doubled till it reached the proper thickness, then how he twisted it and, suspending it on a hook on the doorpost, waxed it, the fastening at the ends of the bristles, then the laborious way of stitching with his awls in hands, the finishing, smoothing of the soles with the sharp edge of a piece of broken glass, the burnishing, the polishing, etc., and all the different operations necessary in the making of a pair of boots out of a few pieces of leather, how all this was performed by one and the same master hand. What a skillful man the shoe-maker was in his eyes. But now, if he compares this with the American factory method, this mode of working, handed down by the craft for thousands of years, perhaps, what an object lesson of development, evolution, and revolution in the industries and arts, taken place within one short generation, presents itself to him by comparisons in this single industry. To examine an American shoe factory is, indeed, the examination of the complete emancipation of labor from any exercise of muscular power directly upon the work. The hand is only used, except in the cutting and hand-lasting, to direct a mechanism, which does all the work which used to be done in former times in the manner stated above. The mechanism itself is set and kept in motion by steam power. To the operative nothing is left but to direct the work. Great is the attention required, swift are the motions to complete a vast amount of work in a very short time with correctness and neatness. No time is left for repairs of bad work. If so, it goes out of the time, the earnings of the work people. Nor is time left to think out poetry of the Hans Sachs, nor mystic transcendentalism of the Jacob Boehm style. Dreamland has no corner left in a Massachusetts shoe factory. If it had, the operative retiring to it while working would soon wake up with a finger caught in a machine. Manifold as are the operations a shoe has to go through till it is finished and ready for use, yet, even in a large factory, very few do the same work which their neighbors do. Every one of the scores of hands through which a shoe has to go till its completion is doing a different part. In the cutting, perhaps a half dozen different parties are employed in cutting the different parts, the soles, heels, uppers, linings, etc. In the sewing of the uppers, the joinings are all made by different operatives. So with the lasting, soling, heeling, burnishing, finishing, making of the button-holes, and sewing on of the buttons, all take different hands and different machines. Yes even the buttons are

being sewed on by machines. So that there is practically nothing left but very close attention and exercise of nerve power, for hours and hours follow the same rapid monotony, but monotony which leaves no chance to go to sleep over. Such, it may safely be said, is the system of work, minutest subdivision of labor, and application of machinery to every branch of work which characterizes the manufacture of boots and shoes in the United States. Work done on any other principle, except for custom trade, could not maintain itself for an hour under the fierce competition in the trade in America.

If we then go away from America to Europe and examine into the working methods there, we take with us another very instructive lesson. It is, that if two do the same thing it is not the same thing, and if two nations make boots and shoes by machinery it is not the same thing either. Here, more than in anything else, we see all the differences in the manners, customs, and habits of the working people manifest themselves. We see how different, indeed, are the ways in which even the same machinery is set to work by different nations and how different the results from its employment. How all the phlegm and want of energy, perhaps due to want of encouragement of the European working classes, is manifested there and in the results when compared with the work and the prodigious output of their American brothers and sisters. Of this phase I shall speak with greater detail, when I come to deal with the different countries where boots and shoes are made by the aid of machinery, and where I have been able to collect data on the subject.

Before setting out on the inquiry I provided myself from an American factory with samples of ladies' button boots of two qualities; one made in Lynn, Mass., and the other representing a slightly inferior quality, corresponding to boots made in country shops, and ranging at somewhat lower prices. I will call the higher grade No. 1, and the cheaper one No. 2. The first sells at the factory at $1.70, and the other grade at $1.35 per pair. The first quality is more stylishly made and has more fancy work, but as to quality and wearing character the difference is not very pronounced. In every instance where I showed my samples to manufacturers in foreign countries they were subjects of praise so far as workmanship or general appearance is concerned if put side by side with their own makes. As to price of goods and labor cost, further on.

A.—THE AMERICAN GOODS.

The work vided into the part relating to the uppers and of bottoming and finishing. The work in the uppers is paid by the dozen pairs, and that in bottoming, etc., per case of 60 pairs.

No. 1.—Ladies' Boots.

Prices paid for uppers per dozen pairs.

Sewing together of leather	$0.03
Sewing together of linings	.05
Outside vamping	.25
Outside heel-fixing	.18
Pressing seams	.02
Closing lining and outside together	.10
Turning lining and outside together	.09
Finishing, stitching round, etc	.08
Sewing fancies	.06
Staying seams	.08
Scollops and button-holes	.35
Sewing on buttons	.04
Per dozen pairs	$1.33

Or per pair, 11 1/2 cents.

Prices paid for bottoming per case (60 pairs).

Stock fitting	$1.00
Lasting and laying sole, by hand	3.45
Sewing sole	.50
Beating out, cementing	.50
Trimming edges	.70
Setting edges	.70
Nailing and shaving, by machine	.60
Scouring heels, sand-papering	.40
Buffing bottoms	.50
Relasting	.30
Burnishing heels	.80
Channelling	1.70
Lining soles (pasting in lining)	.20
Per case	$11.35

Per pair, 18 1/2 cents.

The cutting of the different parts varies between 3 and 5 cents per pair. Taking 5 cents for this quality brings the combined labor cost to 35 cents per pair of finished ladies' boots.

The lower quality (country made) comes, per case, in the bottoming to $7.25, or 12 1/2 cents per pair; cutting, 3 cents, and, with the cost of uppers even as above, brings the boots to 26 1/6 cents. I have not the details of the work of uppers of this quality, but it may be assumed that the work is being done in proportion to the rates paid for bottoming, and the whole work certainly not to exceed 25 cents per pair. On this topic I am told —

That in times past country work has been much decried, but so many good workmen have found their way into the country that nowadays they are producing a good deal better grade. City work is more stylish, neat, and attractive than country work, but is not necessarily more serviceable although it generally would be, because the workmen are paid a higher price to spend more time in accomplishing it.

Work is always given out by the contractors in American shoe factories, and in Lynn the price paid for stitching the uppers complete, with button-holes, including cotton and silk used in stitching buttons, shop rent, insurance, salaries, and all incidentals, delivered at the factory ready for putting on the last, is 20 cents. This is an all-kid, with scolloped vamp and foxing, so called. A plain vamp, Lynn made, would cost from the contractor 15 to 18 cents per pair. In other words, 6 to 8 cents more than the labor items paid in factories to the different branches engaged in the making of the uppers pay the contractor a profit besides all expense and incidental charges, as stated above.

The wages run on an average of $7 per week for girls and about $12 for men; I have heard of girls earning as high as $15 and men $18 and $24, and even above. The general average is probably not above $10, men and women, all round for a full week's work. Dull weeks, with small orders, and weeks without work between the seasons, set in and have to be considered also. It is said all over the shoe trade that eight months of full work amply provides all America, at the present rate of output of the shoe factories, with all the foot-gear required for the year.

This, however, does not alter or change the price and cost of product, and is only referred to incidentally. The relation of cost of production to earnings is an important point, however, and it will be seen at a glance from this that where work is paid by the piece, as it is now in almost every line of manufacture, that goods do not cost 1 cent more in labor to produce, whether the earnings in a week average $12 or $6, or even less than that, for the same workers on the same piece prices.

From the piece prices paid it can be easily computed how many pairs a girl would have to sew in the work assigned her to earn her $1 to $1.50 per day, and a man to earn his $2 or $2.50, if at full work.

B. — GERMANY.

Germany is making great efforts in introducing machinery, and following up England and, principally, America, in this as well as in other lines — to my mind as yet with divided success. I will not speak of her fixed system. This is a matter which closely enters into the price making facts, but it does not much enter into the question of the rather slow adaptation, and the rather inferior working capacity of the operatives, except, perhaps, that by increasing the cost of his loaf it still more aggravates the evils under which the workingman has to stagger. A leading cause is the want of encouragement given to the operatives to get up to a higher level of earnings, from which alone the profitable employment of machinery becomes an important factor in the economy of production. I heard it often expressed that if a working man or woman on piece work earns more than what is the common standard of wages for their class, that at once the price is reduced. The consequence naturally is that none will exert themselves to turn out more than just enough to earn the customary wages. I have heard it even

stated that in many instances piece rates were abrogated when the work people earned too much money and weekly wages resorted to again. This would be putting the cart before the horse, and seems hardly credible, except from the dominating belief that a low rate of wages means a correspondingly low cost of production. Without hope, or something better to strive for, man never exerts himself to the highest extent of his abilities, and those whose economic philosophy consists in keeping the working people at the lowest possible rate of earnings and standard of living are not likely to conduce to rapid progress in the struggle for supremacy. We find, however, among German manufacturers men of high culture and liberal views; men who have not failed to profit by the lesson of a sounder economy, and have shaped their course accordingly. The result is a remarkable success.

Though the following incident is foreign to the subject now under treatment, yet it reveals so aptly the practical soundness of the doctrine of high wages conducing to cheap production, that I will mention the facts here. The facts certainly stand in closest relation with the wider scope of this present inquiry, that of the most suitable conditions under which the most profitable employment of machinery takes place. Several members of the German Parliament, with whom I exchanged views on this subject, called my attention to the arms and machine-making factory of Ludwig, Loewe & Co., who worked on the American system, paid double the ruling wages of Berlin, and in price beat all their competitors in Government contracts and in the ordinary run of business, facts which had repeatedly been brought out and made use of in debates of the Reichstag. Mr. Loewe, the founder of the establishment, as a revolutionary refugee, had emigrated to America. There he became acquainted with the American system of working. He studied with especial care the machine works and especially the labor-saving automatic tool machinery. After the amnesty he returned to his native country and established a factory after the American system. The first outfit of machinery was imported from America and supplied by the Pratt & Whitney Company, at Hartford, Conn. This fact was corroborated to me at my last visit to Hartford by Messrs. Pratt & Whitney. Now they make their own machinery. My visit to the factory of Messrs. Ludwig, Loewe & Co. gave me some very interesting information, of which the main essentials have been stated. It is not perinent to entter into the organization of these works here, but only to state a few facts relating to the economy of production.

The factory employs, according to the state of trade, from 600 to 1,000 men in the fire-arms factory. Among a force of 600 men the earnings of the various groups stand as follows:

About 240 work on contract and earn from 5.50 to 11 marks a day. The latter are foremen and overseers. Turners and planers earn from 180 to 210 marks ($43.20 to $50.40) a month, or from 7 to over 8 marks a day ($1.67 to $2). Two hundred and forty mechanics earn from 150 to 180 marks ($36 to $43.20). Two hundred and forty laborers earn from 100 to 150 marks ($24 to $36). The general average of wages for all is 160 marks a

month or $38.40, or over $9 a week—a general average not very far below the general average of total employed in American works and certainly fully 25 per cent. above the average in English factories. Compared with the general average ruling in Berlin, it is nearly double the customary rate of wages. The superintendent of the works told me:

It pays us well to pay this high rate of wages. It is economically the cheapest. Best paid men produce the cheapest. We get the picked men, the cream of the working population. With the fine and delicate machinery crude hands would spoil more than their wages; besides, the highest utilization of this subtle and expensive machinery can only be realized by good and very attentive mechanics. We have another advantage. If work is plentiful we get all the work out of a machine that can possibly be got out of it. If work is slack, as often happens in this somewhat precarious trade, we let the men go for whom we have no work and employ the remainder to the full. The reputation which employés of the firm have in the labor world secures them employment at current Berlin rates, with other firms only too anxious to get men from Loewe's works. If the firm gets back to full working and wants the men back, of course the much higher wages paid there is sufficient to bring them back at first notice.

Smaller establishments working at much lower rates of wages have to give up the contest, and can not stand against this rising firm, whose works are constantly extending and who were engaged at the time of my visit in making large additions to their works.

It is almost an axiom that where low wages prevail, machinery, where it is not indispensable, will not be made use of, except under great pressure. Where it was used under these conditions I have found that it is employed in a perfunctory manner and never with the results obtained in high wage countries. Nowhere have I found this rule to apply so forcibly as in the boot and shoe trade, to which I will return now after this short trangression.

In Germany shoe manufacturing by machinery has taken root, but by no means has the "iron shoe-maker" supplanted the one of flesh and blood. Machine shoes are largely made for export. The home trade is mostly supplied yet by the custom shoe-maker, as in the olden days. The uppers, to a large extent, are factory made in this case, but the soling and finishing are done by the shoe-maker on his bench. Equally prevalent is the system of making the boots throughout. Nor is this very surprising. The labor cost of factory-made shoes is comparatively high, as will be seen from the statement below. The day wages are low at which a journeyman hand shoe-maker works, and if the profits on ready-made goods going to the manufacturers and shop-keepers are added to the cost of the materials and labor, it will be seen that the shoemaker can easily hold his own against factory-made goods. It is only where hand labor is high that machinery will find profitable employment. Even in Erfurt, Saxony, where machinery is more extensively employed, I was told by manufacturers that they give out a great deal of their work to be made complete from beginning to end by shoe-makers living scattered in the country districts and mountains; that rather than be without work they submit to reduction in the price, which brings it down to the level of machine work. With them it is either starvation by slow or by long process.

The first place visited was Offenbach-on-the-Main, the seat of an extensive industry in leather and leather goods of all kinds. In boots and shoes the work is much divided, and a good deal of machinery is employed. Little power, however, is employed. Most of the turning of machinery is by hand or foot-power.

The factory visited is entirely on uppers. They employed in all 61 people, men, women, and children. Of these, 18 were men and the rest women and young persons. The weekly pay-roll was 861.23 marks in the week of my visit, an average of 14.12 per head. The 18 men earned 440 marks, or 24.44 marks per head, leaving 421 marks for the remaining 43 operatives, or 9.80 marks per head. We may say that 12 marks would be the average per adult females and, perhaps, 8 marks for young persons.

The cost of labor in a pair of shoes like the samples I submitted, and standing in finish and work somewhat between my No. 1 and No. 2, is as follows:

Labor cost of making uppers of ladies shoes in Offenbach.

	Per dozen.
Sewing together of leather	$0.10
Sewing together of linings	.05
Outside vamping	.08
Outside heel fixing	.07½
Pressing seams	.01½
Closing lining and outside together	.28
Turning lining and outside together	.04
Finishing, stitching round	.07
Sewing fancies	.08
Staying seams	.06
Scallops and button-holes	1.44
Sewing on buttons	.30
	2.59

To which must be added the cost of cutting of 1.10 marks or 26½ cents, and we have a total of $2.85½ per dozen or 23¾ cents per pair, against 11½ cents in America, and with the cutting at one-half of 5 cents, as the American cutting includes also all the parts connected with the soling and heeling of 13$\frac{7}{12}$ cents.

Of course in comparisons of this nature it is impossible to cover always the same operations under the same names and items. In one country and another work is differently divided among the operatives. We have to take the nearest approach we can get to, and this I have adhered to as closely as possible. Setting quality against quality, the work costs not over one-half in America, while the general average of earnings is more than twice as high than in America. On the other hand, the expense of running the business is more moderate in Germany, but the net profit share higher.

		Marks.
This firm does an annual business of		300,000
Cost of materials	200,000	
Labor (counted at 50 weeks, an average of 800 marks per week)	40,000	
Salaries	6,000	
Rent	1,200	
Taxes	600	
Traveling expenses	5,000	
General expenses	6,000	
		258,800
Net profit (or nearly 14 per cent.)		41,200

The proprietor of the factory is an intimate friend of mine, and I know that he has accumulated considerable property, a thing not so very easy in America on a manufacturing business of $75,000. The expense would eat up most of the gross profit. Here in this case, however, all put their shoulders to the wheel, husband, wife, and sons, now grown up, all watch closely the incomings and outgoings with the above highly satisfactory results. I have estimates covering the same items from American shoe factories, which show only a very small net profit, and that due to taking liberal advantage of all the discounts. The foregoing only relates to the making of the uppers. The soling and finishing I examined in another factory, which, however, as a working system I did not find very perfect. They employ the McKay machines for stitching the soles, which, however, is not done by steam-power, but by turning a hand-wheel with one hand and guiding the shoe with the other. Whoever knows anything of the McKay machine can imagine the difficulties connected with thus working a machine, which under the hands of an expert American operative and steam as the motive power turns out from five to six cases a day. Here, however, the man attending the machine is paid by the week, and in spare moments attends to other work besides. The output as can be imagined is not a very high rate.

COST OF MANUFACTURING SHOES IN FRANKFORT-ON-THE-MAIN.

Here I visited a factory which I had been told was a model factory and working on the most improved progressive basis. I found in the proprietor one of the most affable and liberal-minded gentlemen. After I had related my errand he at once spoke to me without reserve on the conditions under which work is conducted in both countries. I found in his factory, which he showed to me from beginning to end, everything run on very systematic principles. The factory is run by steam-power with machinery of the latest and most improved pattern. Some of the sole-stitching machinery is of German invention, and stitched with two threads through the sole and the uppers the same way that the hand sewer sews the sole. Still, with all this, the work costs nearly double what the American costs in labor expense. The details of the different minor operations in the principal headings summarized give the following comparison of cost in a quality like the Lynn shoe No. 1. Labor-cost per dozen in—

	Lynn.	Frankfort.
Uppers	$1.33	$2.88 to $3.60
Soling and finishing	2.27	3.36 to 3.36
Cutting	.60	.36 to .36
Total	4.20	6.60 to 7.32
Or per pair	.35	.55 to .61

The German manufacturer knows this disparity very well. He labors under great difficulties as against the American manufacturer. The system of work is a different one and can not be organized on the basis of the American working methods. The orders which they receive (in Germany) are small, full of details and minute variations, which have all closely to be adhered to. One market wants this, another that specialty, and no one can work on stock or anticipate the want of a more than capricious trade. There the work people would not work with the same spirit as the American work people, being neither as steady nor as enduring, and not willing or able to turn out quantities as they do in America, even if the system necessary from the differing trade conditions were not in the way. Cheapness in America is produced only because large quantities are continuously turned out on a few patterns. Other advantages are that in producing large quantities in a few patterns the American buyer gets all the advantages in the leather market. The choice lots are sent to America, and the German manufacturer has to take what is left and pay a good deal more money for his selection, besides, than the large buyer who buys in big lots. This, of course, is so in all markets and lines of goods. The large buyer has a no inconsiderable advantage over the one who buys in small selections. The American buyers' advantage abroad is more than lost again when he brings his leather to custom-house barriers, and this may serve as a crumb of comfort to my amiable informant. The earnings in this factory are: For women, 9 to 15 marks = $2.16 to $3.60; for men, 18 to 30 marks (average 21 marks) = $4.30 to $7.20. The work is continuous throughout the year.

COST OF MAKING MACHINE-MADE SHOES IN BERLIN.

The shoe industry in machine-made goods is not very extensive. Much of the old hand-labor shoe-making prevails, and consumers preponderatingly get supplied from this source. I noticed a factory which was pointed out to me as one of the leading firms, and was surprised at finding it of very limited dimensions. They employed, however, very good machinery and worked pretty expeditiously, still in no wise comparable to American swiftness. My samples were the wonder of all, and the whole force seemed to be at a standstill and critically examined the American shoes. They all admitted that it was excellent work. I cannot say that the boots which were shown to me as a match to those I brought with me were in any way as nice and neat. Theirs were of a somewhat coarser grain, which was readily admitted; they can serve for comparison, however. They paid per dozen:

	Marks.	
For the making of the upper	9.00	$2.16
For sewing on of buttons	.40	.10
For button-holes	5.00	1.20
For cutting of uppers	2.00	.48
Per dozen (32⅛ cents per pair)		$3.94

The bottoming and finishing, per dozen, stands:

	Marks.	
For cutting soles and heels (stamping out)	.50	$0.12
For lasting and laying sole	3.80	.92
For sewing sole	.50	.12
For pasting heels	.35	.08¾
For pressing on heels	.80	.20
For trimming edges	1.00	.24
For polishing and finishing	5.00	1.20
Per dozen		2.88
Per pair		.24¾
Uppers		.32⅛
Making the cost in Berlin		.57
Against the cost in Lynn		.35
Difference in favor of America		.22

There is a difference in favor of America of fully 63 per cent. if the goods are taken into consideration. The earnings of men were given me as follows from the wage books: Heel-shavers, 20 marks or $4.80; cutters, from 24 to 27 marks or $5.76 to $6.48; lasters and sole-stitchers, 24 to 30 marks or $5.76 to $7.20; burnishers, from 20 to 30 marks or $4.80 to $7.20. It was admitted, however, that 21 marks per week would be about a fair average all round.

SHOE MANUFACTURING IN VIENNA, AUSTRIA.

The reasons stated governing shoe-making in Germany hold good also concerning Austria. Shoe-making is, therefore, to a very large extent, conducted by the old hand-power. Austria, however, as well as Germany, works largely for export trade, and the wholesale boot and shoe trade works partly by machinery and partly by hand process. Some very large concerns exist in Vienna, who work mostly by machinery. I visited the most prominent one. The principal of the firm occupies a very high position in commercial circles of the Austrian capital. No sooner had I opened the subject that had brought me to him—the comparative cost and working methods in different countries—than he said:

You need not tell me; I know all about it. We can no more compete with you in the manufacture of boots and shoes, or in anything which depends on the highest utilization of machinery, than we can fly. Our people have neither the strength, nerve, or endurance of yours, nor have they the ambition. They don't eat and don't work. They are underfed, and it would be ridiculous to expect that they can cope with your operatives. We should have to

build them up first before we could expect them to work with the steadiness of yours. You work for one market, and turn all your attention on its demands. Besides, you must consider that our trade is quite a different one from yours. You run a few styles through a season; we have to cater for all markets — Roumania, Servia, the Turkish provinces, South Oceanica, and almost every other foreign market, besides our own, and all want variations. We have to adapt ourselves to all, and make styles to suit everybody. But still, with all that, our people, even if they were worked on your system, could not turn out the work as cheaply as you do, unless they became used to an entirely different mode of living. Beer, bread, cheese, vegetables, and an occasional bit of meat are hardly sufficient nourishment for exacting, hard, and steady factory work.

Vienna work, in almost every line of manufacture, is excellent, and comes nearer to Parisian work in elegance and finish than any other. In leather work it excels all. In ladies' boots and shoes it is superior to any work I have seen in German factories; still my samples were considered with very favorable criticism from so high an authority. Of course defects were pointed out to me, which they would not show in their best goods, but for good medium qualities they had nothing better to offer. Their cheaper goods are made in the provinces, the cutting is done in Vienna. Selecting goods which compared in almost everything with my samples, number of buttons, and button-holes, he called his foreman and told him to give me the exact prices paid for the work in the particulars wanted. Leaving out the details, the cost per pair for ladies' button boots are as follows for the different divisions:

Ladies' button boots.	Made in Vienna.		Made in country.	
	Florins.	Cents.	Florins.	Cents.
Cutting	.20	8	.20	8
Uppers	.90	36	.45	18
Bottoming and finishing	.65	27	.43	17
Per pair	1.75	71	1.08	43
Compared with American at		35		25

The button-holes are machine made. A skilled machine button-hole maker earns 2.50 florins, or $1 per day. The earnings are about as follows:

Occupations.	In Vienna.		In the provinces.	
	Florins.	Dollars.	Dollars.	Florins.
Good sole-workers	12 to 14	4.50 to 5.20	8 to 10	3.20 to 4.00
Cutters	18 to 24	7.20 to 9.60		
Sewing-machine operators (girls)	11 to 12	4.40 to 4.80	9 to 10	3.60 to 4.00
Finishers, operators, etc	15 to 18	6.00 to 7.20	10 to 12	4.00 to 4.80

The Vienna prices, it will be seen, compare very favorably with those ruling in Germany and England.

MANUFACTURING SHOES IN ERFURT (THURINGIA).

I visited Erfurt (Thuringia) after my return to Germany solely because I was told that there the manufacture of shoes was conducted more on the American system than anywhere else. I found large factories turning out large quantities of goods, but mostly of an inferior kind. They had mostly all American machinery, and the factory where the proprietor was kind enough to give me the desired information gave out the work by the case lot of 60 pairs, the same as in America. His best quality of ladies' shoes, as he admitted, would barely compare with my cheaper number. The button-holes are sewed around instead of button-hole stitches, as in America and in the work of other places described above.

The labor cost in this was: For the uppers (without button-holes), 55 florins or 13 cents; for bottoming and finishing per case, 60 pairs, 48.50 florins = $12.14, or 20¼ cents; for cutting per pair, 12 florins or 3 cents; total, 36¼ cents—still 50 per cent. above the lower American quality, although there are no button-holes worked, and the shoes do not come up to the general standard of my sample No. 2. I need not repeat the information received from the gentleman. It is an affirmation of all that has been said above on the subject of competition. Though their advantages in Erfurt are greater on account of the different class of goods and the more thorough system of machine work and subdivision of labor, yet they do not reach the American standard.

Wages are lower in Erfurt than in any other part of Germany where I investigated the shoe industry, and 15 marks or $3.60 for men as weekly earnings may be taken as a fair average.

SHOE MANUFACTURING IN ENGLAND.

I reserved England for the winding up of my inquiry. I expected to find here things approaching the nearest to American conditions and American working methods. But, as in most things terrestrial, a close view brings out points differently from what they appear viewed from among the clouds. To my great surprise I found everything repeated that I had found to be the case on the Continent. I visited for the pupose of my inquiries Leeds, London, Stafford, and Leicester. In Leeds a common class of goods is made, mostly for men's wear. This did not come within the scope of this investigation, however. In London most of the work is done by outside shoemakers. The manufacturing houses cut out the work and give it to contractors (sweaters). These own sewing-machines and make the uppers. They sometimes have sole-sewing machines, but in most cases the work is given out to the sole-sewer and then to the finisher.

The hard condition of these poor workers has lately been brought into public notoriety by a commission of the House of Lords, but, deplorable as the condition is, I did not find that their work is as cheap as American work. From the prices stated it appears that the piece rates are considerably above those paid in American shoe factories. A great deal of hand work runs in, and it can not well be classed with a factory industry as that of Stafford and Leicester.

THE SHOE INDUSTRY OF STAFFORD.

Stafford makes principally ladies' boots and shoes and mostly of a finer grade. They work principally with machinery, and the factories which I visited have some of the best and newest. The machinery is driven by steam. The sewing of the uppers, the lasting, and the general work of bottoming is done in the factory, while the finishing is done out of the house. The trade is largely an export trade and work is not very steady. They complain of dull seasons. Some attribute it to the fact that Leicester is better equipped, works on a larger scale, and can turn out the goods cheaper. On comparison I did not find this to be the case. The Stafford goods impressed me very favorably, and as to the economizing of labor I found nowhere in Europe any better system. The first factory I visited employed a lasting-machine of American invention along with their hand lasters. They find, however, that it has no advantage over hand lasting and the latter process is fully as cheap. They likewise make their own lasts, also on an American machine. They all, work people and employers, praise American inventiveness and machinery. Complaint was made in this instance of poor materials employed where strength is required. The handles where the screws are fastened, and which, in tightening and loosening, are subjected to great strain, were of cast-iron and easily broke off. Some were broken off and this gives cause to just complaint. It is hard to build up an export trade, and so easy to spoil it by saving at the wrong end. A large machine-shop is going in Stafford, manufacturing machinery for which about a fourth of the parts are imported from America, while the rest is supplied from English firms.

The shoe factory referred to employs about 600 hands. They employ hand burnishers in the factory. The greater part of the finishing is done outside. The shoe factories all sell direct to the retail trade, and take special orders for any of the shops. The retail shop sends in your measure and the factory makes the shoes or boots, the same as any hand shoe-maker; the custom work, of course, at a somewhat higher rate. The labor price for the best quality is as follows:

1. — Cost of binding ladies glove-button boots per dozen pairs.*

	s.	*d.*	*Cents.*
Making linings and taping backs	0	1¾	3½
Stitching on top band and button-bit	0	2¼	4½
Closing outside front and back seams	0	4½	9
Stitching outside front and back seams	0	6	12
Paste fitting throughout, vamp turned in inclusive	4	0	96
Stitching round top and scollops	1	0	24
Working button-holes by machine	1	0	24
Sewing down ends, perling, and sewing on buttons	2	0	48
Stitching on vamps, with paste	0	2½	5
Stabbing on vamps, with half chain-work in front	0	9	18
Pressing seams	0	1½	3
Per dozen	10	3½	$2.47
Per pair	0	10¼	20½

*The term "binding" is used for making the uppers.

2.— Cost of labor to bottom a first-class plain machine-sewed ladies' boot.

	s.	*d.*	*Cents.*
Stock fitting	0	0¼	0½
Sewing	0	1	2
Cutting soles, lifts, middles, top pieces, puffs, shank, insoles, etc.	0	2	4
Making, including lasting, inserting puffs, opening channel, relasting, putting down channel and heeling complete	0	9¾	19½
Finishing complete, waist plain	0	8½	17
Total	1	9½	43
Uppers	0	10¼	20½
Grand total	2	7¾	63½

The bottoming is paid in bulk, according to trade list prices, and so is the finishing.

The earnings are, on the average, as follows:

	£.	*s.*	
Cutters	1	5	$6.00
Sewers, lasters, and shoe-makers in general	1	6	6.24
Adult male labor generally	1	4	5.76
Sewing operatives (girls)	0	12	2.88

From another factory I obtained the price of a somewhat inferior quality, corresponding with my sample No. 2. Here I have for the uppers, including everything (cutting, etc.), 9*d.*, or 18 cents; and for bottoming and finishing, 1*s.* 4*d.*, or 32 cents; a total of 2*s.* 1*d.*, or 50 cents. But here, also, as elsewhere, they make every conceivable kind of boots and shoes. While the first factory visited worked mainly on ladies' goods, the other turned out ladies' men's, and children's goods of leather and of stuff, hunting boots, boots and shoes for Scotland, for England, for the Boers of the Transvaal, for the Cape, India, South America, etc. Each market requires separate study and very special attention, and, of course, is sufficient explanation why their system of work cannot easily be altered.

LEICESTER.

Leicester is one of the leading centers in the shoe trade. The factory visited is the largest in Leicester. It employs 1,200 people. A large proportion of the work is done outside. Here, also, I found the same conditions prevail as those described above. The firm are, besides, manufacturers on a large scale at Leeds, where the coarser goods are made, mostly for men's wear. Extensive tanneries are also conducted by them. They do a very large shipping trade all over the world, and I saw cases marked to all the continents of the globe. In Great Britain they have not less than eighty retail shops of their own where their goods are sold direct to the consumer. Every shop draws all its goods and supplies from the Leicester factory or the wholesale houses in Leeds, even to the twine and packing paper, upon requisition from the manager. In Stafford this house was pointed out to me as the leading shoe house, where I should find things worked on a much grander

scale, cheaper, and more approaching the American system of work. I found them, however, quite different from anticipations based on that preliminary information. Their trade is as diversified as any I had looked into before. The partner of the firm, who took me around the different workshops, kindly giving me a whole afternoon of his precious time, which, on my taking leave, he said he would have to make up by working late into the evening, told me that they had between 700 and 800 different patterns. All of them I saw hanging in rows along the walls of the large cutting room, each set under its proper number marked in large letters on the wall. All of them come up more or less frequently in the course of the year. The firm send out sample assortments of any new thing they make to their customers all over the world, for whose markets they may be suitable, and after years often get orders for them from foreign markets. Old styles may, therefore, be called up again at any time. Thus their styles and numbers are continuously on the increase. They have no jobbers in the shoe trade. All goes direct to the retailer. From their retail stores special orders for customers come in every day, and then it will be seen that though their trade is of great magnitude, yet the system of work is not different from the systems described above. I learnt from the gentleman that they are much tied down to trade regulations by the trades-union. The prices of the work are regulated by the quality of the leather. A common shoe is taken as a basis from where the price is built up in successive stages to the highest quality. Every addition of work, of course, receives additional compensation.

They at one time tried and introduced all possible machinery, lasting machinery, burnishing, heel-shaving, etc., but gave it all up again. I was shown a whole cellar full of machinery, mostly American, costing several thousand pounds, which, as my informant said, they would probably have to sell for old iron. The working people do not take kindly to machinery, and, besides, would object to any lowering of wages on that account. Hand-labor is cheap, and they find it more profitable and satisfactory to return and adhere to it. The less machinery they employ, except for stitching, the better they find it. Some burnishing and finishing is done in the factory, but the vastly greatest part of it is done outside by the shoe-makers in their houses. A much more highly finished class of goods is wanted in the English markets than American, and they do not find that anything but a hand-polish will produce it. Even the lasting is mostly done outside, and the lasted shoe is returned to be sewed in the factory, from where it goes out again to the finisher. The firm had so much trouble in the factory when they did their lasting inside (stoppages, shop conferences, demands for higher wages), that the firm resolved to stop the factory-lasting and distribute it around, where they get it done without friction.

The prices paid for ladies' boots (No. 1) are as follows:

Uppers, per dozen.

	s.	d.	
Cutting	1	9	$0.42
Fitting all upper part	4	7	1.10
Machine-sewing part	4	4½	1.05
Fancy stitching	1	4	.32
Button-holes (machine-sewed)	1	10	.44
Buttons, sewing on (machine-sewed)	0	11	.22
Per dozen	14	9½	3.55
Per pair	1	2¾	.29½

Bottoming and finishing, per dozen.

	s.	d.	
Cutting bottoms	0	6	$0.12
Lasting, etc.	7	6	1.80
Sewing on soles	0	3½	.07
Putting on heels	0	10½	.21
Burnishing, finishing complete	8	1	1.94
Per dozen	17	3	4.14
Per pair	1	5¼	.34½
Adding uppers	1	2¾	.29½
Per pair for uppers and bottoming and finishing	2	8	.64

The earnings of shoe-makers in Leicester, principally those employed in the factory, are as follows, all work being by the piece:

	£	s.	
Clickers (cutters)	1	8	$6.72
Shoe-makers (lasters)	1	10	7.20
Very quick hands	1	15	8.40
Sole-machine men	1	15	8.40
Sewing-machine hands		16	3.84
Fitters (placing together parts ready for machine sewing)		15	3.60

Button-hole operator, 18 to 22*s*, or $4.36 to $5.28.

The higher earnings in Leicester than in Stafford, the piece prices being nearly the same, are due to a fuller supply of work. I refer back to my remarks on the subject to the pages above treating of the Stafford industry. The working conditions of Leicester are more favorable than in other shoe centers, such as Stafford, Northampton, etc. The hours of work in the factory are fifty-two and a half hours per week, from 8 a. m. until 1 p. m., and from 2 to 6.30 p. m. for the first five week days, and Saturdays from 8 a. m. until 1 p. m.

SUMMARY.

I have now exhausted the range set for this inquiry and can proceed to tabulating the results.

Labor cost of manufacturing ladies' button boots in Lynn, Mass.; Frankfort, Offenbach, and Berlin, Germany; Vienna, Austria; Stafford and Leicester, England; and weekly earnings of operatives in the respective places, of quality—sample No. 1.

Place.	Cost of labor.				Weekly earnings.		
	In uppers.	In bottoming.	In finishing.	Total labor cost.	Men.	Women.	Average.
	Cents.	*Cents.*	*Cents.*	*Cents.*			
Lynn, Mass	13 7/12	21 1/12	.....	35	$12.00	$7.00	$10.00
Offenbach, Germany	23¾	.....	.....	.....	5.87	2.88	3.39
Frankfort, Germany	30	31	.....	61	4.32 to 7.20	2.16 to 3.60	3.80
Berlin, Germany	32⅝	24¾	.....	57	4.80 to 7.20	.....	*5.01
Vienna, Austria	40	31	.....	71	4.30 to 9.60	4.40 to 4.80	.....
Stafford, England	22½	24	17	63½	5.76 to 6.24	2.88	.....
Leicester, England	29½	18⅓	16⅙	64	6.72 to 8.40	3.60 to 4.32	.....

* Men's wages only.

In the German and Austrian shoes in this statement, except in Offenbach, where the uppers are made in the factory, the uppers are largely made outside, and the soling and finishing is done inside; for the English, on the contrary, the opposite system stands.

In percentage, taking the American standard as 100, we get the following proportions:

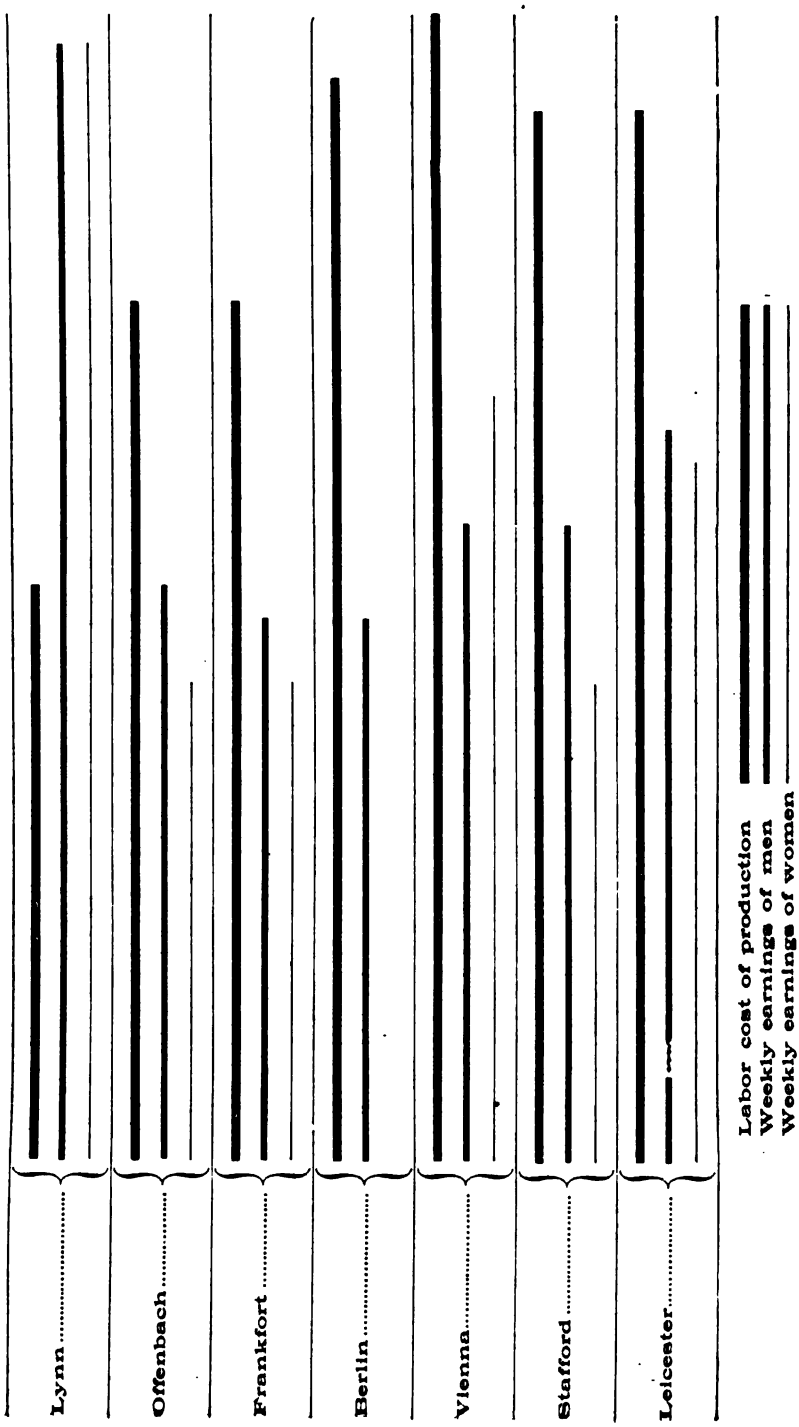
Percentage of labor cost and percentage of weekly earnings, male and female, in manufacturing ladies boots in the respective countries named.

Place.	Percentage of labor cost.	Percentage of earnings.	
		Men.	Women.
Lynn, Mass	100	100	100
Offenbach, Germany	176	49	41
Frankfort, Germany	174	49	42
Berlin, Germany	188	46	.....
Vienna, Austria	203	55	66
Stafford, England	182	50	41
Leicester, England	183	62	59

TUNSTALL, *August 29, 1888.*

J. SCHOENHOF,
Consul.

The following diagram shows the relations of cost of labor to earnings of operatives.



FREEDOM OF THE RIVER SOHELDT.

This year brings around the twenty-fifth anniversary of the freedom of the River Scheldt, and this most important event for Antwerp was celebrated here on the 14th instant.

In the year 1863 the regular river tax levied by the Dutch Government upon all vessels coming up the stream was abolished. The international enfranchisement treaty was concluded on May 15, 1863, signed July 15 following, and went into effect on August 1 of the same year, from which date all vessels could enter the River Scheldt freed from the former burdensome tax.

Special treaties had to be arranged in advance with all countries, stipulating the manner and time of payments necessary to be made on account of the object in view, and later a general treaty was concluded decreeing the abolishment of the tax and fixing the participation each country interested was to have in this redemption. Paragraph No. 1 comprises the following dispositions:

First, Renunciation on the part of His Majesty the King of Holland, in consideration of the sum of 17,141,640 florins, to the taxes levied upon the navigation of the River Scheldt and its confluents, in virtue of the treaty of April 19, 1839.

Second, The obligation on the part of His Majesty the King of Belgium to pay this amount.

Third, Abolishment of the tax from the date of the exchange of the ratifications of the treaty of May 12, 1863.

The amounts agreed to be paid by the different countries and free cities were as follows:

	Francs.		Francs.
Argentine Republic	19,680	Lubeck	25,681
Austria	549,360	Mecklenburg	1,036,320
Brazil	1,680	Norway	1,560,720
Bremen	190,320	Oldenburg	121,200
Chili	13,920	Peru	4,320
Denmark	1,096,800	Portugal	23,280
Ecuador	1,440	Prussia	1,670,640
France	1,542,720	Roman States	5,760
Great Britain	8,782,320	Russia	428,400
Greece	23,280	Spain	431,520
Hamburg	23,680	Sweden	543,600
Hanover	948,720	Turkey	4,800
Italy	487,200	United States of America	2,779,200

Together about 22,500,000 francs. The sum needed to make up the amount required, nearly 15,500,000 francs, was paid by the Belgian Government.

It is true that this Government, in order to protect its commerce, exonerated all vessels from the tax laid upon them by the treaty of April 19, 1839, by paying the same itself to the Government of Holland, but the result was that the port charges necessarily became so excessive as to place the port of Antwerp at a great disadvantage in comparison with her neighbors, and to endanger her future prospects.

From the date of the freedom of the Scheldt the commerce of this port has developed in an extraordinary manner. The following figures will show to what extent: In 1862 the importations by sea were 568,871 tons, and by land 95,281 tons, making a total of 664,152 tons, against 2,438,178 tons by sea and 409,372 tons by land; making a total of 2,847,550 tons in the year 1886, being an increase of about 335 per cent. in the space of twenty-four years.

In the exportations for the same period the gain was even greater. In 1862 177,702 tons of merchandise left the country by sea and 44,063 tons by land, a total of 221,765 tons, against 821,753 tons by sea and 452,002 tons by land; a total of 1,273,755 tons in 1886, showing an increase of over 500 per cent.

The increase in the general transit was about the same proportion. In 1862 this movement was 17,128 tons by sea and 68,373 tons by land, aggregating 86,494 tons, against, respectively, 201,268 and 127,592 tons, aggregating 328,860 tons in 1886, nearly four times as much as twenty-four years before.

The total commercial movement combined amounted in 1862 to 971,411 tons against 4,470,165 tons in the year 1886, showing the enormous increase of 3,498,754 tons, or 460 per cent.

The maritime movement of the port of Antwerp shows the tonnage of vessels arriving in 1862 to have been 579,899 tons, and 3,658,900 tons in 1886, an increase of 3,079,001 tons, or more than 600 per cent. The first year after the abolishment of the river tax the benefit to this port is shown from the fact that the arrivals had increased over 120,000 tons, or 20 per cent.; in 1867 the tonnage of the arrivals had increased to 1,128,739, thus doubling itself in four years, and in 1887 the arrivals amounted to 3,801,932 tons, placing Antwerp at the head of the maritime ports of the continent of Europe.—ANTWERP, *August 24, 1888.*

JOHN H. STEUART,
Consul.

MANUFACTURE OF BRUSHES IN THE BLACK FOREST.

The inhabitants of the raw, unfruitful uplands of that part of Baden known as the Black Forest have never been able to wring a life support from their niggard soil. From the very earliest times the inhabitants of this wild, romantic, and healthy region have felt the necessity of other means than agriculture for sustaining life. The Black Forest has therefore always been a very bee-hive of industry. To clock-making and straw-weaving and plaiting must be added the manufacture of brushes. One hundred and fifty years ago people turned from gleaming lead and silver among mines to other and more remunerative forms of employment. Spinning of cotton and brush-making were introduced, the latter almost by accident. The introducer was a certain Leodegar Thoma, who aided his father in a grist-mill. The need for an instrument to bring together the ground meal set him thinking; the

result was a rude brush, made of rough wood, with rough holes and rough pigs' bristles fastened together with nails. It was a beginning. Rough as it was he soon found customers in the neighboring mills for all he could make. Thoma was then twenty-one. He turned his time and attention exclusively to brush making, and, of course, succeeded in devising new and better methods of construction. From making brushes for flour-mills he turned to making shoe, clothes, and horse brushes. He was commissioned to make brushes for the Austrian garrison stationed at Freiburg. With the money thus obtained he went further and further, until at last he saw a large domestic and export trade established.

Brushes from his shop in the little Black Forest village of Todtnau found their way into Switzerland, Belgium, and France. Week after week saw new efforts put forth and new improvements. Nails and strings as fasteners gave way to wire and glue. About 1840, through Franz Joseph Faller, the brush industry got a new impulse. Up to this time only common brushes had been manufactured; now the finest classes were finished. People once poor began to grow comparatively wealthy. The work was parcelled out among the people, Faller being satisfied with fair profits. The grand ducal government, as it generally does, assisted the young industry by granting premiums for the best results. The directors and teachers of the industrial schools spared no effort to make success complete and gratifying. This generous rivalry and co-operation could only have one result.

Soon a scarcity of bristles compelled manufacturers to seek a substitute in the plant kingdom. This was found in the fiber of a hemp-like plant found in Mexico. This discovery led to the production of a good, cheap article. The increase in the manufacture of this class has grown to enormous dimensions. Some time afterwards horse and goat hair were used; also rice fibers, the latter especially for horse and scrubbing brushes. The bristles now used come mostly from Russia, China, and North America. The difference in bristles is so great that some are very cheap, while others cost $300 per 100 pounds.

At last machines were introduced; the hand-workers must turn to other employments. Machines could now saw, turn, plane, and bore the woods much better and quicker than human hands, besides doing it much cheaper. Machines have even been invented for putting in the bristles, but with no great success; in the case of bent or oblique surfaced brushes they cannot be used at all. Until something better is found women and children will continue to put in the bristles.

The production is thus divided: (1) sawing, boring, cutting, and turning the woods; (2) preparing the bristles, putting and fastening them in; (3) veneering, painting, and polishing the brushes. This division of labor aids in developing skill in special branches. In Todtnau there are twenty large brush factories in operation, employing over 600 hands. Besides, each family carries on the hand work at home. Here children of eight and ten years are able to assist after school hours. The annual production is 2,000,000 brushes, worth 800,000 marks.

WAGES PAID.

Men get from 2 to 3 marks, or from 47 to 71½ cents, a day; women get 1 to 2 marks, or from 24 to 47 cents, a day; children, 12 to 20 cents. It depends, however, very much on the person's skill, since most of the help are paid for piece-work, a very skillful man earning from $1 to $1.25. The wood used is a beech found in the Black Forest, and sells for 60 to 70 marks per cord. Oak, maple, linden, and cherry are also used. For veneers, mahogany, palisandes, citron, and rose woods are much used. These are paid for by the pound, and are usually very expensive. The principal supply is sold in Germany and Switzerland, but of late years thousands are finding their way into Holland, England, and American countries.

The brush industry of the Black Forest, thanks to intelligent direction, and encouragement on the part of the grand ducal government by premiums, and on the part of the directors and teachers at the industrial schools, is in a position to meet the world in competition, both as to quality, cheapness, beauty, and rapidity of production. This has been proven at exhibitions at Vienna, Sydney, and other places during the last twenty years. The industry has grown up from the simplest and crudest beginnings, and hundreds of families have been nourished by it even in times when other and more pretentious branches have suffered. —MANNHEIM, *August 15, 1888.*

J. C. MONAGHAN,
Consul.

REPORT OF THE BOMBAY FACTORY COMMISSION.

HOURS OF WORK.

Male adults have always been considered to be outside the principle of protection afforded by factory law. They are supposed to be able to take care of themselves, and experience has clearly shown in England that they have done so, and managed to diminish their hours of work more effectually than any act of Parliament could have done, and the result is that in those industries in which men form the majority of hands employed instances of overwork are unknown. Men may be worked overtime, night time, and even on Sundays, so far as the English factory law is concerned, but, in practice, shortening the hours of the protected classes (children, young persons, and women) has just as effectually compelled the shortening of the hours of work of the men as if the latter had been directly dealt with. No doubt this is partly due to the fact that one work in connection with a trade can rarely be carried on independently of some other in which the assistance of children, young persons, or women is needed. It is also generally recognized that the factory acts in England would never have been so successful or so useful as they have been if their operation had been strictly limited in practice to the labor of the weaker protected classes. We do not, therefore, recommend any legislative interference with the labor of adult males.

The protected classes in England, or those whose labor has been regulated by the factory acts, are:

I.—Children between ten and fourteen years.

II.—Young persons between fourteen and eighteen years.

III.—Women eighteen years and upward.

To enfore the law against overwork it was found absolutely necessary not merely to fix a maximum period of labor in the day, but also maximum limits within which such period might be taken. The absence of such a provision rendered the factory act of 1848 in England unworkable; consequently the present English factory act prescribes that the labor of the above protected classes in textile factories must be taken within 6 a. m. and 6 p. m. or within 7 a. m. and 7 p. m. Within these hours children or half-timers must be worked either in morning and afternoon sets or on alternate days, attending school once a day under the former system and twice a day under the latter, when not employed. Young persons and women must be allowed two hours for meals, and can not be worked continuously for a spell exceeding four hours and a half without at least half an hour for a meal. On Saturday they are prohibited from working more than six hours, and on Sunday their employment is forbidden. No express provision exists in the law prescribing in so many words the number of hours that may be worked in a day or in a week. The limitation is the result of the provision laying down that the labor of protected persons may be taken within certain hours, and within these hours a certain time must be allowed for rest and refreshment. According to the English law, therefore, women and young persons can not be worked more than fifty-six hours in the week.

In the Indian factory act we are astonished to find that the maximum limits within which regulated labor is to be taken are not prescribed; and we further note that there is no mention of women and young persons whatever. Children only between seven and twelve years of age are protected, and that most inefficiently. The result of these omissions is that women can be worked as long as men, or from sunrise to sunset—that is, eleven and a half hours a day, or eighty and a half hours a week, in cold weather, and fourteen hours a day, or ninety-eight hours a week, in the hot weather, and if artificial light is used they may be worked day and night for days consecutively; and that such excessive labor is exacted in the small ginning and press factories of Khándesh is distinctly proved by the evidence before us.

We must add, however, to the credit of the cotton mills in Bombay that, although we found in some cases low-caste women working on machinery as long as men, the almost invariable rule is to treat women with leniency and consideration and to give them light hand work, such as reeling and winding, which admits of their coming later and leaving earlier than the men.

It is a curious fact that, while in Lancashire of 423,000 employed in the cotton factories 253,000 are females, 138,000 are males, and the rest children, in the Bombay Presidency of 49,928 operatives in textile factories, 38,159 are adult males, 10,794 are females, and 975 are children. Mr. Jones, the

inspector, believes that in time employers will avail themselves more of women's labor in India, but on this point we had not sufficient evidence before us to arrive at a definite conclusion. We are strongly of opinion that some restrictions are necessary on the labor of women, more especially when employed on machinery driven by steam. Here continuous attention and assiduity is called for, and the work must be done like clock-work. The monotonous and unremitting character of the labor, with the necessity for close application to rapidly-moving machinery, has been found to tell on the constitutions of women in England, whereas in hand labor, where no steam power is employed, the pressure is not nearly so great. We can not overlook the facts either that in England the death rate is higher amongst women employed in textile factories on machinery than amongst female operatives otherwise employed, and the higher mortality amongst the children in factory towns is ascribed to the conditions under which their mothers labor. As recommended by Mr. Meade King, women and children should not be allowed to work before 6 a. m. or after 6 p. m., and in that period they should have an hour's interval for food and rest—either a full hour in the middle of the day, or two half-hours with a convenient spell of work between them.

It is worth noting why no mention is made of young persons in the present act. The first bill introduced into council contained the following interpretation clauses:

"Child" means a child under the age of twelve.

"Young person" means a person between the ages of twelve and sixteen years.

And section 6 ran—

No child shall be employed more than six and no young person more than eight hours in any factory in any one day.

The Honorable Mr. Colvin, in his speech in the council assembled for making laws and regulations, on Friday, March 11, 1881, explained why a change was made before the bill became law. He now came to section 7 of the bill. It would be seen that the committee had abolished the distinction which had existed in the bill as originally introduced between "children" and "young persons," and that the time for the employment of young children had been extended from six to nine hours. He would briefly explain the reasons for these changes. The bill in its original shape had allowed young persons to be employed for eight hours and children for only six, the last mentioned provision being in accordance with the English law. On closer examination, however, there appeared to be good reasons for extending the time of employment of children in this country. In the first place, it was beyond question that factory labor in India was not so severe or continuous as at home. Then at home a child who worked in a mill for six hours was obliged by law also to attend school for three hours of the day, and he was therefore employed, in one shape or the other, for nine out of the twenty-four. In this country, supposing that children were not employed for more than six hours, it could hardly be expected in the existing state of

education that they would attend any school, because a great many of them would have no school within reach which they could attend, and because if they had it was extremely improbably that their parents would send them to it. If they were not allowed to remain in the factory, they would either be turned out to absolute idleness or to seek for manual labor elsewhere. A further consideration, and one entitled to much weight, was that if the labor of children were limited to six hours great facilities would be given for evading the law. Mills in this country never worked for less than twelve or fourteen hours, and it would be impossible to prevent a child who had worked six hours in one factory from going to work six hours in another. He said that it was impossible to prevent this, because any elaborate system of registration and inspection by which a check might be put upon it would lead to worse evils than the evasion of the law itself. These were the grounds on which the hours for the labor of children had been extended; and the majority of the committee thought that nine hours was not too great an extension, provided that one hour's interval was allowed during that time for food and rest. This extension having been determined on, there was no longer any object in maintaining a distinction between young persons and children.

It seems the threefold consideration that children or half-timers in England worked six hours and attended school three hours daily; that their work in Indian was of a lighter description than in English factories; and, lastly, that there was a probability of their working six hours in one factory and six in another on the same day, unless attendance at a school was exacted or the term of labor was extended, led to its being finally decided that children were to be worked nine hours. The question thus settled, the retention of a distinction between young persons and children became unnecessary.

It must be admitted that under the arrangement children fared but badly. The time of their employment was increased by an hour beyond the maximum contemplated by the bill for young persons between twelve and sixteen years of age, while no counterbalancing advantage was granted in the way of raising the age for first admission to employment, or for postponing that for full employment as an adult.

None of the witnesses before us were in favor of making a third protected class of young persons, while a large majority were in favor of increasing the age for first employment from seven to eight, or even nine, and some advocated the prohibition of employment as an adult before thirteen. Mr. Meade King strongly recommended that no child should be employed under eight, and that thirteen was quite young enough for a child to commence full-time work in an Indian factory.

We observe that the Bombay Mill Owners' Association, in their memorial to the under secretary to Government, dated September 6, 1880, on the subject of the factory bill, stated that:

> If the age to which the act is made applicable is reduced to ten years, much of the injury which the introduction of the measure will do to the cotton manufacture of this Presidency will be avoided. The association would further represent the importance of gradually intro-

ducing any such important change in the relations of the working classes, even if it were without doubt necessary to make the limit of age twelve years. Your memorialists suggest that the interest of the factories, and of the children themselves, would be best conserved by beginning at a comparatively low age and afterwards increasing it. By this means the change would be gradual, and the necessary inconvenience to all classes from an abrupt and vital change would be avoided. The association believes that nothing would justify so high a limit as fourteen years, but should the age of twelve years be fixed on as the ultimate proper limit, the association suggests that it be placed at ten, leaving it to the future to increase it as necessity is shown. The change, if then made, would be a more gradual one, and less injurious to the interests of this new industry. They further suggest that a clause, as recommended by the chamber, be introduced into the bill providing that the certifying surgeon should periodically visit each mill and certify, free of charge, in the register to be kept by the mill, that all the children are physically fit for the work.

It thus appears that the necessity for increasing the age was foreseen and and calculated upon from the first.

We find that one of the principal objects of the English factory acts has been to gradually increase the age for first employment of children. Thus, before 1874 the prescribed age was eight, till the act of that year raised the age to ten for textile factories. Before the important commission, which sat in 1875, and of which his Excellency Sir James Fergusson was president, the evidence and arguments in favor of assimilating the age, and increasing it to ten in all factories and workshops was stated to have been "overwhelming," and the result was that in the factory act of 1878 the statutory limit fixed for all trades was ten, at which it now stands.

Seeing the higher temperature in the mills of this country, the weaker physical development of natives of India, the small practical value of the labor of a child, and the recommendation made by the medical committee appointed by Government resolution No. 3183, dated September 3, 1884, that the ages should be increased to ten, we consider that no child should be employed before nine, and that adult labor should not be exacted until fourteen instead of at twelve as now. We recommend nine in preference to ten suggested by the medical committee, as we think that changes in this direction should be gradual, so as to avoid the possible hardships entailed by throwing a number of children out of employment.

Between five and fifteen is the school age; and, if in this decade nothing is learnt in reading, writing, and arithmetic, the chances are strongly against anything being learnt subsequently. We would be glad to see, therefore, an earlier admission to first employment, say at eight, and an earlier transition to adult employment, say at thirteen, permitted on condition that a child produced a certificate from an educational officer that it had passed a suitable and easy standard or put in a certain number of attendances at school. A similar system has been attended with success in England, and we would strongly urge in the interests of the employers and the employed, as well as in those of trade at large, that some scheme be drawn up through the education department with a view to educating Indian child-operatives in the way above indicated.

If the age of children be raised in the manner suggested by us, we do not see our way to recommending the creation of the third class of protected laborers, *i. e.*, young persons under sixteen years of age, suggested by Mr. Meade King. Sufficient difficulties are now experienced in determining the age of children without adding further complications. Birth registers and certificates are not to be had as guides in India, and the dental development can not be relied on with certainty.

Until school accommodation is supplied and general arrangements can be made for educating working children, and obliging them to attend a school for a portion of the working day, or on alternate days, we concur with Mr. Meade King in thinking that the only way to enforce the statutory limitation of nine hours for child's labor not being exceeded is to fix a period of employment for such. It is quite evident that on visiting a mill, say at 6 o'clock in the evening, it would be impossible for an inspector to say with certainty whether a child, then working, had been employed only the prescribed nine hours in the twelve or thirteen hours that the mill had been running. If the law has hitherto been obeyed, such is ascribable more to willingness on the part of the owners and managers than to the effect of supervision. We may, however, conscientiously say that we fear many children are worked full time. We recommend, therefore, that children's labor should be taken within the hours of 7 a. m. and 5 p. m., with an hour's interval for meals and rest, to be taken when the women have their relaxation.

DAYS OF REST—SUNDAYS.

There is no point on which opinions have been more nearly unanimous than in regard to the necessity for one day's rest a week, or four days in the month. The factory commission which sat in 1875 made a strong recommendation on the subject, and a large majority of the witnesses then examined urged the matter. Section 8 of the present act allows children not less than four days' holidays in the month, but they form such a very small proportion of the hands employed that adults have not been affected by, nor have they derived any indirect benefit from, the law. We now advocate the extension of the law to women (the medical committee would, we observe, still further extend it to men). The four days should be made statutory by Government notification under the act, and they should be Sundays whenever possible, banks, offices, and docks being closed on that day. Most of the witnesses gave it as their opinion that Sunday would be the most convenient day, and we believe that it is the one invariably selected by the mill-owners under section 8 for the children's holiday. We learn, also, that on the Bengal side mills and other factories close on Sundays, and in Bombay the large G. I. P. and B. B. and C. I. railway workshops, employing between 6,000 and 7,000 hands, certainly do so. On the occurrence of important native holidays, like the Diwáli or Holi, in the month, preference should be given to them for rest, work being done on the following or preceding Sunday.

On an average only fifteen holidays are given throughout the year in Indian factories, while in England, besides ten holidays, there are fifty-two Sundays and fifty-two half-Saturdays, making a total of eighty-eight days altogether. The difference is striking. A feeling in favor of the proposed four days' rest was manifested by all the workpeople, and in the memorial signed by 5,500 operatives and presented to the committee, this concession to all hands, male and female, is prayed for.

We recommend that Government should determine on and notify the days after consulting the Mill Owners' Association, to avoid all chances of inconveniencing trade.

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We were much struck by the evidence given before us regarding overwork in the Khándesh (Páchora) Ginning and Press Works. These establishments generally employ less than 100 hands, of whom, more especially in the ginning works, the majority are women and some are children. They work, intermittingly or spasmodically, according to fluctuations in the market and on emergent orders for cotton from Bombay. Their usual working hours are 4 or 5 a. m. to 7, 8, or 9 p. m., but when working at high pressure they work sometimes day and night for eight days consecutively until the hands are tired out and lose their health.

Mr. Rastamji Frámji Wádia gives a very painful description of these industries:

In ordinary seasons, that is when work is not very pressing, the engine starts between 4 and 5 a. m. and stops at 7, 8, or 9 p. m., without any stoppage during the day. The hands work continuously all these hours, and are relieved by one another for meals. In busy seasons, that is, in March and April, the gins and presses sometimes work both night and day, and the same set of hands work both night and day, with half an hour's rest in the evening. The same set continue working day and night for about eight days. When the hands have been working day and night for eight days, and it is impossible to go on longer, other sets of hands are procured from Bombay, if they can be found. In this case the work is distributed between the old and new sets of workers, half working all night and half working all day. More women are employed in gins than in presses. Both the men and the women come to the factories at 3 a. m., as they have no idea of the time, and they wish to make sure that they are at the factory by the time it opens, *i. e.*, 4 a. m. I have 40 gins in one of my factories at Páchora, and I have only 40 women attending these 40 gins. I have only eight spare women. I never allow these women off the gins. I am not alone in this respect; it is the general system. There is no change of hands except at meal times. The hands that work from 4 a. m. till 10 p. m. are paid from 3 to 4 annas per day. All the factories pay at this rate; sometimes we pay our hands 6 pie as a bonus. There is no other work in the district in which these poor women can get employment. These women come from Sátára and Khándesh, and are of the Maratha class. We work these long hours from the 15th of November till the 31st of May, but only about ten days in each month. Sometimes we work day and night for two months, but in this case we employ two sets of laborers. We employ no children. When the wages are so low for the adults there is no advantage in employing children. I certainly would recommend that legislation should be extended to these factories. I am personally largely interested in this matter, being a proprietor, secretary, and treasurer. I should like to have these ginning factories worked only twelve hours a day, as we could then charge 8 rupees instead of 4 rupees, and, of course, we could pay our laborers better

wages, but if the Government forced us to pay our laborers more wages without restricting our hours we would be obliged to charge the merchants higher rates. When we see that the hands are absoluteiy tired out we are obliged to get others from Bombay. The hands who work these long hours do frequently die. Women are employed on this business.

I do not consider that sufficient provision has been made in case of fire for the escape of the laborers. All these factories should be required to provide two gates and two staircases at a good distance from one another. This is not the case at present.

I would recommend the extension of the act to these smaller factories. I do not know all the provisions of the act, so can not speak of them all, but I can say positively that the act should be applied so far as the guarding and fencing of the machinery, sanitation, and the limitation of the hours of work for women are concerned.

He is corroborated in every detail by the witnesses, Mr. Drewet, Mr. Hormasji Kersedji, and Tánu Bápu, from whose evidence we give extracts below, so we fear there is only too good reason for believing that this description is not overcolored.

Some industries, such as wool and cotton cleaning, are carried on in small factories in Bombay in this intermittent manner when there is a supply of material available sufficient to keep the machinery going. Their operations are conducted under the most adverse sanitary conditions, ventilation being wholly absent, while the air is loaded with animal matter in one case and with fluff in the other, contaminating flour ground in the same room. The extension of the law to these manufactures we consider peremptorily required on grounds of health as also for the protection of the operatives from injury caused by unfenced machinery. We observe also that the sanitary commissioner, in paragraph 27 of his report, writes in strong terms of some of the processes highly injurious to health which he saw carried on in cotton presses in Bombay.

Clause (*b*) of section 2 of the act exempting factories of less than 100 hands should be repealed. There seems scarcely any need to occupy much space in recapitulating the opinions on this point. One witness after another have added their testimony, and have confirmed the original reports of Mr. Meade King (dated July 7, 1882), and of Mr. Jones (No. 135, dated March 7, 1884) on the subject.

After concluding the evidence on the large factories we took that regarding the minor ones, to which the act does not apply, and it will be found recorded in the proceedings of the twentieth, twenty-first, twenty-second, twenty-third, twenty-fourth, and twenty-fifth meetings of our commission. Twelve of the fourteen witnesses who were examined before the commission, among whom are some proprietors, gave it as their opinion that the act should be extended to minor factories. The remaining two dissent, but it is worth noting that these two gentlemen, Messrs. Jamsedji Hormasji and Nauroji Nassarwánji Bhedwar, are intimately connected with corn-grinding and wool-cleaning factories, the one as manager and the other as partner. These establishments have been described in the severest terms, and are represented as most requiring legislation owing to the process of wool cleaning contaminating flour being ground in the same room. The Perseverance

Flour-grinding and Wool-cleaning Factory, or Framji Byramji Flour Mill, of which Mr. Jamsedji Hormasji is the manager, was twice visited by the committee, several times by the inspector, Mr. Jones; by the sanitary commissioner (*vide* paragraph 22 of his report), and by Dr. Lyon, and all condemned in strong terms its sanitary condition. Much weight, we consider, can not, therefore, be attached to the opinions of these two dissentients.

We personally visited several of these small establishments, and their unsanitary condition, their unfenced machinery, and their pressure from overwork satisfied us that early steps were necessary for bringing them under supervision.

It was with respect, however, to the ginning and pressing establishments in Khándesh that the evidence struck us most. We have given an extract from it above, but to form an adequate idea of the state of things described, it is necessary to read the statements of Mr. Rastamji Frámji Wádia, Mr. Thomas Drewet, Mr. Soorji Hemráj, Mr. Hormasji Kharsedji, Mr. Tánu Bápu.

Mr. Rastamji Framji Wádia deposes to the want of ventilation, cleanliness, and sanitation generally. He knew of one ginning factory of 40 gins, with no windows and only four doors, the walls of which he had to knock down to improve the ventilation. Machinery was generally unfenced. He had three men killed by an opener, and knew of a factory burnt down by one of these machines. The same set of hands (men and women) worked continuously day and night for eight consecutive days. Those who went away for the night returned at 3 in the morning to make sure of being in time when the doors opened at 4 a. m., and for the eighteen hours' work (from 4 a. m. to 10 p. m.) 3 or 4 annas was the wage. When the hands are absolutely tired out new hands are entertained. Those working these excessive hours frequently died.

Mr. Drewet's deposition is nearly as strong: The season (ginning) lasts about eight months, about five of which the hands work from 5 a. m. to 10 p. m., and the remaining three months they work day and night. The hands are mostly women. Gins and presses never stop for meals; as a rule the hands take their meals at the gins, and he has often seen them taking their food and supplying the gins at the same time. He has often seen them thus supplying the gins mechanically three parts asleep, and a child at the breast, sucking one minute and throwing cotton into the machine the next. They go on working day and night until they are completely worn out. He has frequently heard of their going away sick, but has never heard of their death. He has himself worked day and night without sleep, but has never been ill through doing so. He has had Gaddum's press working day and night for three months, and has worked himself on an average of eighteen hours a day during this period. The year before last he worked day and night in the ginning factory he was superintending. He thinks it will be found that the women had worked day and night for as long as a week at a stretch.

He does not think there is a double set of children anywhere, so they must have worked day and night. The women would have worked twenty-three out of twenty-four hours; speaking of twenty-three hours he means that the woman was relieved by her friends or relations. If a woman was absent for two or three hours no notice would be taken of it. The women are looked on as part of the gins, and they belong to the establishment, and two or three hours is the longest time they can be absent out of twenty-three without any notice being taken of it. The women really work more than the men; the men shirk their work and the women do not. In the ginning factories the women earn 3 annas and the men 4 annas per day. If they work all night they are paid annas 6 and 8, respectively, for the twenty-four hours' work. The dust in these factories is caused by the opener, which is usually kept outside. These openers are for tearing the cotton open. They strike fire sometimes and burn down the premises. This, however, is rare. They strike fire frequently, but have only caused two factories to be burnt down to his knowledge. Stones, sometime the size of an egg, get in the opener and are thrown out with great force and strike a man like a bullet. He thinks nearly all the presses have openers. The women are treated more like animals than human beings, by their husbands more particularly.

Soorji Henráj states: In the ordinary months of the season the bell is sounded at 4 o'clock and the men begin to assemble. The work begins at 5 o'clock. In the busy months of the year his factory has worked till 11 p. m. He has seen all night work done in other places on a few occasions. He has known cases where hands have worked three or four days continuously on an end, and women were amongst these hands. Many of the hands in his factory have become ill from overwork.

Hormasji Karsedji states: Sometimes in his press they worked two days and two nights without stopping. When they worked forty-eight hours at a stretch they stopped for half an hour in the evening. The women worked forty-eight hours, the same as the men. They have worked eight days and eight nights without stopping, and he himself has been ill through working these excessive hours. After working eight days without stopping they are compelled to get another set of hands from Bombay and work with two sets. The machinery in his factory was unfenced, the engine being in a separate room. He had an opener and had had accidents; a stone had been thrown out and injured a man. He had seen a man killed in this manner in another press. He had fires caused by the opener, at least one or two in a season.

Tánu Bápu, overseer, tells much the same story: When there is not much work they commence at 6 a. m. and stop at 7, 8, or 9 p. m. When there is much work they work from 4 a. m. till 10, 10.30, or 11 p. m. The men and women sometimes work for ten or twelve days and nights at a stretch without rest.

Mr. Ommanney, an assistant collector, addressing the commission on the 13th November, 1884, concerning these factories, stigmatised them as being about as cruel a way of making money as any thing he could think of.

The above evidence requires little or no comment. It is a sad tale of great want on one side and cruel cupidity on the other, calling louder than anything brought before us for legal interference. We feel, however, that, even with respect to legal regulation here, we must be moderate in our recommendations, as the result of legislative interference may be to deprive these wretched women of their employment and to their place being supplied by men, or to lower the small pittance they receive to such a point as would counterbalance the disadvantages attaching to their employment by the Legislature. These ginning and pressing factories are not numerous, but, being scattered over the mofussil, and in remote parts of the country, are perhaps of more importance to the districts in which they are situated than the larger factories round a center of industry like Bombay, the poorer classes in their neighborhood being almost dependent on them for existence. Too much interference with them might drive the laboring classes to parts like Bombay, already overcrowded; while in time of scarcity or famine they might usefully supplement the efforts of the Government to support those in want. There is no doubt that they are entitled to some consideration also owing to the greater healthiness of the conditions of labor in the country; consequently we recommend that women and children be allowed employment for sixteen hours, with two hours' rest, in temporary factories, such as ginning presses up-country, working for shorter periods than six months in the year.

If the clause to which we refer is repealed, the question arises as to where the line is to be drawn and where inspection should cease. In England even domestic employment in dwelling-houses, if any member of the protected classes (child, young person, or woman) is employed in handicraft, is by existing law under regulation and inspection. We, of course, would not go this length in our recommendations, but we are strongly of opinion that all factories, no matter what the number of hands employed, in which steam, water, or other mechanical power is used, should be under regulation, and that other places or workshops where manual labor is exercised should be brought under the law if ten memhers of the protected classes are employed therein. We may add that we draw the line at ten owing to the impossibility, without more inspectors being appointed, of enforcing the law in workshops employing less hands.

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REPORTS

FROM THE

CONSULS OF THE UNITED STATES

No. 97—SEPTEMBER, 1888.

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1888.

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VALUES OF FOREIGN COINS.

As adopted by the United States Treasury Department January 1, 1888.

Country.	Monetary unit.	Par of exchange or equivalent in terms of U. S. gold dollar.
Argentine Republic	Peso	$0.96,5
Austria	Florin	.34,5
Belgium	Franc	.19,3
Bolivia	Boliviano	.69,9
Brazil	Milreis of 1,000 reis	.54,6
British possessions in North America	Dollar	1.00
Chili	Peso	.91,2
Cuba	do	.92,6
Denmark	Crown	.26,8
Ecuador	Sucre	.69,9
Egypt	Pound (100 piasters)	4.94,3
France	Franc	.19,3
German Empire	Mark	.23,8
Great Britain	Pound sterling	4.86,6½
Greece	Drachma	.19,3
Guatemala	Peso	.69,9
Hayti	Gourde	.96,5
Honduras	Peso	.69,9
India	Rupee of 16 annas	.33,2
Italy	Lira	.19,3
Japan	Yen { Gold	.99,7
	{ Silver	.75,3
Liberia	Dollar	1.00
Mexico	Dollar (silver)	.75,9
Netherlands	Florin	.40,2
Nicaragua	Peso	.69,9
Norway	Crown	.26,8
Peru	Sol	.69,9
Portugal	Milreis of 1,000 reis	1.08
Russia	Ruble of 100 copecks	.55,9
Spain	Peseta of 100 centimes	.19,3
Sweden	Crown	.26,8
Switzerland	Franc	.19,3
Tripoli	Mahbud of 20 piasters	.63
Turkey	Piaster	.64,4
United States of Colombia	Peso	.69,9
Venezuela	Bolivar	.14

FOREIGN WEIGHTS AND MEASURES, WITH UNITED STATES EQUIVALENTS.

Denomination.	Where used.	United States equivalent.
Almude	Portugal	4.422 gallons.
Ardeb	Alexandria	7.6907 bushels.
Arratel or libra	Portugal	1.011 pounds avoirdupois.
Arroba	Portugal and Brazil	32.38 pounds.
Do	Spain and Buenos Ayres	25.36 pounds.
Do	Spain (wine)	4.26 gallons.
Artal	Morocco	1.12 pounds avoirdupois.
Baril	Argentine Republic and Mexico	20.0787 gallons.
Candy	Bombay	560 pounds avoirdupois.
Do	Madras	500 pounds avoirdupois.
Cantar	Turkey	124.7036 pounds avoirdupois.
Catty	China	1.333 pounds avoirdupois.
Do	Japan	1.31 pounds.
Do	Java, Siam, Malacca	1.35 pounds.
Do	Sumatra	2.12 pounds.
Centner	Bremen	127.5 pounds.
Do	Brunswick	117.5 pounds.
Do	Darmstadt and Zollverein	110.24 pounds.
Do	Denmark and Norway	110.11 pounds.
Do	Nuremberg	112.43 pounds.
Do	Prussia	113.44 pounds.
Do	Vienna	123.5 pounds.
Fanega	Mexico	1.54728 bushels.
Do	Peru	140 Castilian pounds.
Gramme	Metric	15.432 grains avoirdupois.
Hectoliter	do	26.417 quarts.
Kilogram, or kilo	do	2.2046 pounds avoirdupois.
Kilometer	do	0.621376 miles.
Last	Belgium and Holland (dry)	85.134 bushels.
Do	England, for dry malt	82.52 bushels.
Do	Prussia	112.29 bushels.
Libra	Castilian	7100. grains troy.
Do	Chili	1.014 pounds avoirdupois.
Liter	Metric	1.0567 quarts.
Livre	Guiana	1.0791 pounds avoirdupois.
Maund	Bengal	82.285 pounds avoirdupois.
Do	Bombay	28 pounds avoirdupois.
Do	Madras	25 pounds avoirdupois.
Meter	Metric	39.37 inches.
Do	Metric (cubic)	1.308 cubic yards.
Do	Metric (square)	1550.0 square inches.
Oka	Egypt	2.7235 pounds avoirdupois.
Do	Hungary	3.0817 pounds avoirdupois.
Do	Turkey	2.83418 pounds avoirdupois.
Picul	Borneo and Celebes	135.64 pounds.
Do	China and Sumatra	133⅓ pounds.
Do	Japan	130 pounds.
Do	Java (Batavia)	135.10 pounds.
Do	Hemp of Manila, Philippine Islands	139.45 pounds.
Do	Sugar of Manila, Philippine Islands	140 pounds.
Pie	Argentine Republic	0.9478 feet.
Do	Castilian	0 91407 feet.
Pik	Turkey	27.9 inches.
Quarter	England	8.252 bushels.
Quintal	Brazil	130.06 pounds avoirdupois.
Do	Buenos Ayres	101.42 pounds avoirdupois.
Do	Castille, Chili, Mexico, Peru	101.61 pounds avoirdupois.
Do	Metric	220.47 pounds.
Tael	Cochin-China	590.75 grains troy.
Tonde (ton)	Denmark	3.94783 bushels.
Vara	Castilian	0.914117 yard.
Do	Curacoa, Cuba, and Peru	33.375 inches.

CONSULAR REPORTS

ON

COMMERCE, MANUFACTURES, ETC.

No. 97.—SEPTEMBER, 1888.

AUSTRALASIAN WOOL TRADE.

The returns of the export of wool from all the colonies for the season of 1887–'88 have been made up to the 30th of June, 1888, and, as predicted in my report of the 20th of March last, the quantity is in excess of that of the previous season by nearly 100,000 bales. The total quantity of wool exported from Australasia from the 1st of July, 1887, to the 30th of June, 1888, was 1,283,350 bales, against 1,185,282 for the corresponding period of 1886–'87, thus showing an increase of 98,068 bales. New South Wales increased her export by 64,310 bales; Victoria, 15,865 bales; South Australia, 1,907 bales; Queensland, 23,576 bales, and Western Australia, 65 bales. There was, however, a decrease in the quantity exported from New Zealand of 1,964 bales, and from Tasmania 5,061 bales. The decrease in New Zealand was occasioned by the inclement weather during the lambing season, and the excessive rains at shearing time. The rains in many districts affected both the weight and the quality of the fleece.

EXPORT OF WOOL.

The subjoined table shows the total quantity of wool exported from each of the colonies for years ended June 30, 1887–'88:

Colonies.	1888.	1887.	Increase.	Decrease.
	Bales.	*Bales.*	*Bales.*	*Bales.*
Victoria	347,863	331,998	15,865	.....
New South Wales	397,271	332,961	64,310	.....
South Australia	150,027	148,120	1,907	.....
Queensland	88,881	65,305	23,576	.....
West Australia	16,438	16,373	65	.....
Tasmania	16,657	18,621	.....	1,964
New Zealand	266,213	271,904	.....	5,691
Total	1,283,350	1,185,282	105,723	7,655

The above table shows the net increase to be 98,068. The great bulk of the exports went direct to London. Of the exports for 1888, London received 1,172,345 bales and the Continental countries 42,900 bales direct and 45,336 bales via London; total Continental countries, 88,236 bales. The United States received 18,847 bales direct and 3,922 bales via London; total United States, 22,769 bales. A large portion of New South Wales wool is shipped to Europe and America by way of other colonial ports. For instance, there are annually exported from Melbourne between 40,000,000 and 50,000,000 pounds of wool, and a little more than a third of that amount is sent by way of Adelaide.

The total shipment of wool from Sydney during the year ended December 31, 1887, was 128,151,154 pounds, of which 125,167,424 pounds were shipped in the grease and 2,983,730 consisted of washed wool.

I am indebted to Mr. Alexander Bruce, chief inspector of stock in New South Wales, for the following estimation of the New South Wales clip sent to Sydney, and also the proportion sent across the borders and to Melbourne, Adelaide, and Brisbane for the years 1886–'87:

Ports of shipment.	1886.			1887.		
	Greasy.	Washed.	Total.	Greasy.	Washed.	Total.
	Pounds.	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*
Sydney	115,810,501	2,505,650	118,316,151	125,167,424	2,983,730	128,151,154
Melbourne	35,913,969	1,285,408	37,199,377	45,922,914	1,090,073	47,012,987
Adelaide	13,891,088	671,721	14,562,809	16,054,563	.....	16,054,563
Brisbane	150,305	4,829	155,134	330,189	18,667	348,856
Total	165,765,863	4,467,605	170,233,471	187,475,090	4,092,470	191,567,560

NUMBER OF SHEEP.

On the 31st of March, of the present year, the estimated number of sheep in the whole of the Australasian Colonies was 96,462,038. Of these nearly one-half were in New South Wales, the figures for that colony being 46,965,152, an increase of 7,795,848 since 1887 and of 15,304,831 since 1885. New Zealand takes rank next to New South Wales in the production of sheep, the number being 15,235,501. Queensland comes next, with 12,926,158, while Victoria has only 10,623,985. The number of sheep in each of the colonies at the end of March, 1888, was as follows: New South Wales, 46,965,152; New Zealand, 15,235,561; Queensland, 12,926,158; Victoria, 10,623,985; South Australia, 7,254,000; West Australia, 1,909,944; Tasmania, 1,547,242; total, 96,462,038.

Of the 46,965,152 sheep in New South Wales, 32,474,181 are classed as combing merino. These included pure and stud superfine merino and ordinary, etc.; 13,535,529 are classed as clothing, the total number of merino being 46,009,710. Of the long-wooled sheep, such as the Lincoln, Leicester, and Romney Marsh, there were 384,519, and cross-breds, 570,923; total amount of sheep, 46,965,152.

I am indebted to Mr. Alexander Bruce for the subjoined table showing the number of each kind of sheep in New South Wales:

Classes.	Rams.	Ewes.	Wethers.	Lambs.	Total.
Merino — Combing.					
Superfine:					
Pure and stud	42,940	461,875	124,571	214,593	843,979
Ordinary	76,031	1,744,904	1,341,129	1,221,672	4,383,736
Medium:					
Pure and stud	68,142	995,278	435,152	660,987	2,159,559
Ordinary	171,128	5,796,684	3,857,549	3,579,810	13,405,171
Strong:					
Pure and stud	49,286	877,332	414,860	601,024	1,942,492
Ordinary	116,878	4,179,713	2,647,385	2,795,268	9,739,244
Total combing					32,474,181
Merino — Clothing.					
Superfine:					
Pure and stud	10,977	208,276	107,626	136,404	463,283
Ordinary	25,019	536,257	522,454	302,941	1,436,671
Medium:					
Pure and stud	24,074	314,945	205,617	203,741	748,377
Ordinary	65,203	2,579,689	1,752,776	1,550,674	5,948,342
Strong:					
Pure and stud	19,349	299,520	175,550	215,425	709,844
Ordinary	49,794	1,811,695	1,191,705	1,175,818	4,229,012
Total clothing					13,535,529
Total number of merino sheep					46,009,710
Long-wooled and cross-bred sheep.					
Lincoln:					
Pure and stud	3,075	31,338	27,301	23,471	85,185
Ordinary	3,342	36,631	37,890	21,564	99,427
Total Lincoln					184,612
Leicester:					
Pure and stud	2,957	29,860	29,747	21,485	84,049
Ordinary	2,545	22,638	19,947	15,990	61,120
Total Leicester					145,169
Downs:					
Pure and stud	626	3,678	1,991	2,949	9,244
Ordinary	1,003	7,747	10,948	5,267	24,965
Total Downs					34,209
Romney Marsh:					
Pure and stud	10	91	173	69	343
Ordinary	613	5,086	10,195	4,292	20,186
Total Romney Marsh					20,529
Total number long-wooled sheep					384,519
Crosses.					
Crosses of the above breeds (long-wooled) with merino principally	1,828	213,494	197,580	158,021	570,923
Grand total					46,965,152

During 1887, 614,118 sheep were introduced into New South Wales from the other Australasian colonies, principally overland, and 3,594 by sea. The quarantine regulations which were in force in 1887 prevented importation from England and the United States and other countries. It is estimated that out of the total number of sheep in Australia only about 3,000,000 are shepherded, and that the remainder, 93,462,038, are kept in paddocks. In New South Wales the estimated number paddocked is 44,725,073; shepherded, 1,238,868; both ways, 1,001,211; total, 46,965,152. In forty-five districts the sheep are said to be improving, which condition the chief inspector of stock attributes to the good season, increased attention to breeding and paddocking, and the introduction of high-class rams and ewes and the exercise of judgment and care in classing and culling the flocks. The general average of the lambing for New South Wales is returned by the inspector of stock at 76½ per cent. and the shepherded sheep at 68½ per cent., a very slight difference. In thirty-one districts the lambing was very high, in fourteen districts high, and in seven districts fair, and in four districts low. The fine season was the principal cause of the high average, and the wet weather the low average. The total clip in New South Wales, according to the number of sheep, would be 31,082,200 sheep shorn in the grease, average clip, 5 pounds 9 ounces per sheep, equal 172,894,743 pounds; 90,000 sheep, hot water and spout washed, average clip, 3 pounds 12 ounces per sheep, equal 337,500 pounds; 647,945 sheep, creek washed, average clip, 3 pounds 1½ ounces per sheep, equal 1,997,830 pounds; 554,687 sheep, scoured, average clip, 2 pounds 14 ounces, equal 1,594,725 pounds. Lambs—8,185,458 lambs shorn in the grease, average clip, 1 pound 12½ ounces per lamb, equal 14,580,347 pounds; 123,745 lambs, washed, average clip per lamb, 7 pounds 5 ounces, equal 162,415 pounds; total clip, 191,567,560 pounds.

CONDITION OF THE CLIP.

In nearly every part of Australasia the condition of the clip showed an improvement over that of the previous season. The clip in the Riverina district was more than up to its usual high standard. These wools were broad, well-grown, and heavy in grease. The manager of the New Zealand Loan and Mercantile Agency Company (Limited) at Melbourne states that the Riverside wools showed a decrease in the amount of sand and dust. From the Lower Lachlan the wools were well grown and in good condition. The Upper Lachlan were very heavy in the grease, and in many instances were wanting in luster and fineness. The Eastern Riverina wools were of exceptionally fine quality, light in weight, and long in staple and of brilliant luster. The Darling district produced wools that were well grown but seedy. Wools from the western district of Victoria were very light and fine. The northeastern and northwestern districts of Victoria produced excellent wools, very well grown and light in condition. The South Australian wools were lighter and less ticky than usual.

The wool-growing country of South Australia is divided into four districts:

(1) The Southeastern district adjoining the western border of Victoria. The wools grown there are usually of very fine quality, light in grease, and of good staple. The clips are generally well got up and are often sold as Victorian-grown wool. Occasionally the fleeces suffer from the prevalence of tick. The land is held principally by large free-holders, who pay very great attention to breeding and classing.

(2) The Hill district. This is the home of the best class of South Australian wools, and contains the estates or runs of the most celebrated breeder of stud sheep in that colony. The wool grown in the Hill district is always in demand for the American market. The fleece is of a bright, bold type, sound and long in staple. The sheep are noted for their large, strong frames. The fleeces yield generally from 10 to 12 pounds of wool, whilst those from the best rams yield over 20 pounds each.

(3) The Western district. The wools of this district have the reputation of being free from burr. They are of fair quality and sound is staple, but very heavy in grease, and require great attention to skirting and classing.

(4) The Northern district is the most extensive in that vast colony (South Australia), and extends to the center of the Great Island continent. The wools produced in the Northern district are generally of a red earthy color, dry and wasty, the backs being very tender and fuzzy. The chief fault in this wool in good seasons is the prevalence of burr and seed.

A feature in the Sydney market this year is the introduction of a greater quantity of wool from Queensland than formerly. Queensland now takes the second rank in the number of sheep in Australia and the third rank in Australasia. Growers in Queensland are beginning to see the importance of obtaining quick returns from the sale of their wool in Sydney.

The product this season is remarkable for its fineness and soundness of staple. These fine-haired wools always elicit strong competition from the continental buyers who visit the Sydney markets. At one time it was supposed that wool could not be grown successfully in a country like Queensland, a great portion of which is in the tropics, and it was said even by London scientists that when wool was introduced it would turn to hair. The Australian explorer Landsborough, when confronted with such statements, asked, "How, then, do you account for the woolly heads of the tropical African?"

James Bonwick, F. R. Q. S., an authority on Australasian wool, admits that there is some difficulty in the way of obtaining heavy fleeces in the tropics, but says that there is no obstacle to the production of fine fleeces. The plodding Lincoln or Leicester might suffer from heat or drought, but the more lively merino is at home in such a climate, and delights in the salt bush when the grass fails. The best wool grown in Queensland is in the Darling downs, Peak Barcoo downs, and Diamantina downs, and the counties of Leichhardt and Georgina. It is estimated that the proportion of coarse wool in Queensland is only about one-fifth of 1 per cent. of the number of sheep in the colony.

The Queensland merino is usually classed as fine and medium clothing wool and fine, medium, and strong combing wool. The sheep producing the latter thrive best in the downs, the rich and fertile country immediately west of the main coast range.

Western Australia, although the largest colony in the group, and possessing an area of about 1,000,000 square miles, contains very few sheep. The number of sheep, however, is steadily increasing and new pastures are being discovered. The country east of the Darling River is specially suited for sheep farming, and even in the north there are vast tracts of well-grassed lands. The greater portion of the interior of this vast colony is regarded as of little value, being composed of a succession of sandy ridges and hollows, clothed here and there with scrubby bushes and timber, but without any traces of grass or water. The sheep in the grazing districts have of late years improved in quality, and the farmers take more pains than formerly in skirting their wool. Mr. Henry Austin, in his wool circular for July 1, 1888, is very decided in the opinion that Australian farmers should pay more attention to the weight of the fleece than to the quality. He says: "It can not be too often impressed upon wool-growers that weight is the one thing necessary, and that all other considerations should be sacrificed to its attainment." He argues that at present prices no one can live on the old scale of weights, and that if the farmer wishes to make ends meet he must produce heavier fleeces. He thinks that the wool production of the world has for a time reached its maximum.

COLONIAL SALES.

Between 30 and 40 per cent. of the wool product is sold direct in the colonial market. During the year ended June 30, 1888, the total sale was 374,008 bales. The number of bales offered was 475,658, and it is said that if the offerings had been larger the sales would have increased in a corresponding degree, inasmuch as a number of buyers left before completing their purchases. The London wool merchants are doing everything in their power to check the colonial sales. They agree that it pays the buyer better in the long run to get his supplies in London rather than in Australia, for the reason that the changes in the market are apt to influence private dealers to sell under current rates. This method of reasoning finds little favor, and it is said that it is too much to expect the people to turn over the markets created by their own enterprise to foreign buyers. Moreover, vast sums of money have been expended in the erection of magnificent warehouses with commodious auction-rooms in all the central cities of Australasia. In some of these buildings, for instance that of Messrs. Mort & Co., at Sydney, the seats in the auction-rooms are arranged in tiers up to the landing leading to the business offices. Buyers can have their seats registered, and there is no confusion (as was the case in the past) about the seats. This building is seven stories high. The top floor is used for exhibiting the various kinds of wool. The top room is 140 feet in length and 90 feet in width. The light is so arranged as to be thrown between each tier of wool so as to enable a proper

examination of the article in bulk. The total floor space in the whole block is 178,878 square feet. The floor joists rest on iron girders so as to avoid the loss of space incident to the use of wooden girders. The buildings are on Circular Quay, and in close proximity to the berths of the great steamships trading with Sydney. The warehouses are supplied with hydraulic elevators. Whatever may be said in favor of purchasing wool in London, there is a strong tendency in Australia to encourage the local sales. Buyers find it to their advantage to be on the spot, and the growers are enabled to obtain satisfactory and prompt settlements of their accounts. There are, in addition to those mentioned, several other extensive warehouses in Sydney, those of Goldsborough & Co. and the New Zealand Loan and Mercantile Agency Company (Limited), being especially worthy of mention. The business of the latter company is becoming colossal, and takes rank next to that of Goldsborough & Co. The New Zealand Loan and Mercantile Agency Company (Limited) have for many years recognized the importance of bringing the colonial wool markets as near as possible to the point of production. Besides their immense warehouses in Sydney and Melbourne, they have recently purchased five acres of land at Kensington Hill, near Melbourne, at the junction of the northeastern and western lines of railways, for the purpose of erecting buildings, which, it is said, will surpass anything of the kind in the world. The advantage to growers will be very great, for, with the improvements it is proposed to adopt, the company will be enabled to handle their produce with less cost and with greater facility than formerly. The buyers will also be benefited by the methods they propose to adopt for sampling and shipping the wool. The course adopted by the company in enlarging their business is an evidence of their faith in the rapid expansion and growing requirements of the Australasian wool trade.

The New Zealand Loan and Mercantile Agency Company (Limited), with one exception, handles a larger quantity than any other firm in the colonies, R. Goldsborough & Co. having the first rank, Mort & Co. the third, and the Australian Mortgage and Agency Company (Limited), Harrisson, Jones & Devlin, Dalgetty & Co., Dennis L. Austin, and others following.

The subjoined table shows the number of bales of wool handled by the New Zealand Loan and Mercantile Agency Company (Limited) for the past three years, the total for the past season exceeding its predecessor by 10,736 bales:

Shipments and sales.	Bales.	Bales.	Bales.
	1885.	1886.	1887.
Shipments to London	82,131	85,923	90,291
	1885–'86.	1886–'87.	1887–'88.
Sales in Melbourne	43,617	44,282	45,647
Sales in Sydney	7,408	9,873	14,076
Sales in Adelaide	3,900	5,244	6,407
Sales in New Zealand	9,710	13,470	13,107
Totals	146,766	158,792	169,528

It will be seen from the preceding table that the company increased its operations by 22,762 bales since 1885–'86 and by 10,726 bales since 1886–'87.

In the colonial market wool is sold by one-fourth pence (one-half cent) bids, while in London no bid less than one-half pence (1 cent) is accepted at auction, and strong efforts have been made here to induce the London auctioneers to adopt the colonial plan. Buyers in the London market are, however, opposed to the movement for the reason that it would necessitate an extension of the time of the sales.

SAMPLES OF WOOL.

I am forwarding by the outgoing San Francisco mail steamer *Mariposa* a collection of twenty-four samples of Australasian wools to the Department of State, Washington, D. C. These samples were prepared especially for me by the New Zealand Loan and Mercantile Agency Company (Limited), and are inclosed in a very beautifully polished red cedar case covered with glass doors. Each sample is arranged so as to be seen without opening the doors, and contains a description of the kind of wool, the name of the district where grown, weight of fleece, and the price of same per pound in the Sydney market. The case is divided into four different apartments, representing the colonies of New South Wales, Victoria, South Australia, and New Zealand. The two former colonies are represented by eight samples each and the two latter by four samples each. The whole is surmounted by a tastefully-carved cornice, upon which is inscribed in gilt letters the name of the company making the presentation, etc.

On the next page is a descriptive list of the samples, with the names, brands, descriptions, and prices per pound in Sydney, which has been very kindly prepared for me by Mr. James Wilson, secretary of the Commercial, Pastoral, and Agricultural Association of New South Wales.

Sample 1, Goorianawa Baradine.—Grown in the district of Liverpool Plains, about 238 miles north of Sydney, in open country, consisting of basaltic black soil plains, with belts of timber, sheep paddocked and fed on natural indigenous grasses only. Station situated in latitude 31° 5′ S., longitude 148° 56′ E., having a mean annual rain-fall of 23.29 inches, and on an area of about 136,000 acres carrying an average of 56,000 sheep, breeding and fattening, bred mostly from the Mudgee type of sheep and possessing their characteristics. Several of the qualities of these fleeces were shown in samples Nos. 59 to 64, forwarded with my special report to the Department of State, entitled "The Australasian Wool Season of 1887–'88," in dispatch No. 235 of the 20th of March last. This fleece is a high class combing merino and its Sydney value is 8*d.* (16 cents) to 9*d.* (18 cents) per pound, the average yield per sheep being about 6 pounds. Altitude 850 to 900 feet above sea-level at Sydney.

Sample 2, Murrulla Wingen.—Grown in the Upper Hunter district in the neighborhood of Mount Wingen, or the burning mountain, 182 miles from Sydney on the head-waters of the Hunter River, on ridgy country, with a southwesterly exposure very healthy for sheep. Sheep paddocked, fed on

Descriptive list of samples, with names, brands, description, and prices per pound in Sydney.

No. of sample.	District.	Brand.	Description.	Sydney value, 1887–'88.	Melbourne value, 1887–'88.	Adelaide value, 1887–'88.	Christchurch value, 1887–'88.
	NEW SOUTH WALES.			*Pence.*	*Pence.*	*Pence.*	*Pence.*
1.	Coonabarabran, Liverpool Plains	M. & Co., Goorianawa	First combing, greasy merino	8 to 9			
2.	Wingen, Upper Hunter	F. Murrulla	do	9			
3.	Murrurundi, Upper Hunter	Glenalvon	do	8½ to 9			
4.	Mudgee	N. P. B.	Supercombing, greasy merino	11 to 12			
5.	New England	T. R. C. Dundoo	do	17 to 18			
6.	Burrowa	Tarrengo	do	11 to 11½			
7.	Upper Hunter	Barsham	do	9 to 10			
8.	Bligh	Galga	Strong combing, greasy merino	7½ to 8½			
	VICTORIAN.						
9.	Northeastern Victoria	Killeen	Second combing, greasy cross-bred		7½		
10.	Western Victoria	Decameron	First combing, greasy merino		10¾		
11.	Riverina, N. S. W.	Bull Plains	do		9½		
12.	Northwestern Victoria	H. L. A. / A.	First combing, greasy cross-bred		11¼		
13.	Western Victoria	R. *	Supercombing, greasy merino		12¾		
14.	Northeastern Victoria	Kanumbra	First combing, greasy merino		9		
15.	Western Victoria	W. W. B. / Woodside	do		9½		
16.	Northwestern Victoria	T T / W	Fine combing, greasy merino		9 to 10		
	SOUTH AUSTRALIA.						
17.	North of Adelaide, S. A.	Paratoo	Greasy merino combing			6¼	
18.		Hill River / Stud Flock	Strong combing, greasy merino			10	
19.		Canowie	do			3 to 10	
20.		Hill River / Stud Flock	do			3 to 10	
	NEW ZEALAND.						
21.		Buccleuch	Fine combing, greasy merino				10
22.	Canterbury	G. H. Bangor	Fine quarter-bred Leicester				10½
23.	Do	Gunn	Fine quarter-bred				10½
24.	Do	G. H. Bangor	Coarse half-bred Leicester				10

indigenous grasses only. Station situate in latitude 31° 55′ S., longitude 150° 55′, having a mean annual rain-fall of 25.56 inches and on an area of about 13,000 acres carrying an average of 9,000 sheep, mostly breeding, bred from select combing sheep with an infusion of collaroy, Llangollen and Tasmanian blood carrying very dense heavy combing fleeces, heavy in the grease and possessing luster and character. This fleece may be described as first combing greasy merino, and its Sydney value (1887–'88) is about 9*d.* (18 cents) per pound. Altitude 1,000 feet above sea-level.

Sample 3, Glenaloon Murrurundi.—Grown in the Upper Hunter district, 198 miles from Sydney on the southern slopes of the main dividing or Liverpool range at the head of the Page River, a tributary of the Hunter, at a considerable altitude on ring timber country of excellent grazing quality, very healthy for sheep. Sheep fed on indigenous grasses only. Station situated in latitude 31° 46′ S., longitude 150° 51′ E., having a mean annual rain-fall of 30.35 inches, and on an area of 14,000 acres carrying up to 14,000 sheep, chiefly breeding, bred from selected sheep of the Mudgee type, with an infusion of Tasmanian Prince II blood, carrying fine combing fleeces light in grease with grand luster. This fleece may be described as a first combing merino in the grease, Sydney value (1887–'88) is from 8½*d.* (17 cents) to 9*d.* (18 cents) per pound, a very fair type of this particular class of wool. Altitude above sea-level over 1,500 feet.

Sample 4, N. P. B. Mudgee.—This is the celebrated Mudgee brand of wool in New South Wales, grown at Havilah, 145 miles from Sydney, on the slopes of the head-waters of the Cudgegong River, a tributary of the McQuarie River or western waters. Soil light, warm, and sandy, with heavily grassed flats very suitable for fine wool-breeding sheep. Sheep paddocked and fed on natural indigenous grasses only. Havilah, situated in latitude 32° 35′ S., longitude 149° 35′ E., having a mean annual rain-fall of 25.24 inches, and on an area of 43,000 acres, carrying generally 16,450 sheep with some cattle. This flock has long occupied the premier position among fine combing merino sheep of Australia, and for over forty years have been carefully bred and culled, descended from imported merino ewes from Saxony and rams from George III Spanish merino flock. Great care and study have been used to give them a thorough Australian representative character. Their pronounced type has caused them renown throughout Australia, and to an infusion of their blood into Salt Bush country much of the excellence of many flocks is to be attributed. They carry heavy fleeces of especially fine, even, and lustrous wool of superb quality. The brand has almost invariably topped the London market, and averages from 7 to 8½ pounds per sheep. This fleece is a superb combing merino stud flock fleece in the grease and its present Sydney value is 11*d.* (22 cents) to 12*d.* (24 cents) per pound. Havilah is about 1,900 feet above sea-level on the western slopes of the colony.

Sample 5, Dundee.—An exhibit from a well-known wool-scouring establishment in the New England district of New South Wales, 390 miles north from Sydney, on a table-land notable for its cool, bracing climate and the

excellence of its soil for the growth of imported grasses. At an altitude of 3,200 feet above sea-level, and situate in latitude 29° 17′ S., longitude 151° 37′ E., with a mean annual rain-fall of 39.48 inches in and around the neighborhood. This fleece is a superb combing merino, scoured, and is an excellent type of New Zealand wools; value in Sydney 1887–'88, 17*d.* (34 cents) to 18*d.* (36 cents). The water-shed of this district is the Severn River, flowing toward Queensland, and the Darling River.

Sample 6, Tarrengo, Burrowa.—Grown in the district of Young, about 220 miles southerly from Sydney, on the head waters of the Lachlan River, flowing into the Murrumbidee River; in a very healthy sheep district with a fine climate about 1,500 feet above sea-level; sheep paddocked and fed on indigenous grasses only; station situated in latitude 34° 27′ S., longitude 148° 46′ E., having a mean annual rain-fall of 21.89 inches, and an area of 4,200 acres, carrying 3,300 sheep, entirely breeding; a very carefully bred flock, originally from imported Saxon merino ewes and Mudgee (Havilah) rams, and latterly an infusion of Tasmanian blood. This fleece may be described as a superb combing greasy merino fleece; Sydney value, 11*d.* (22 cents) to 11½*d.* (23 cents) per pound.

Sample 7, Barsham, Murrurundi.—Grown in the Upper Hunter district of New South Wales, 190 miles from Sydney, on the northern slopes of ridges on tributaries to the Page River, flowing into the Hunter eastern waters; on rung-timber paddocks at considerable altitude, about 1,500 feet above sea-level; sheep paddocked, feed on natural grasses only; Barsham situated in latitude 31° 50′, longitude 150° 50′ E., having an average annual rain-fall of 30.35 inches, and on an area of 18,000 acres carrying 11,200 sheep, mostly breeding; bred from very select Mudgee sheep, and possessing their best characteristics in a different soil and climate, and ranging from 7 to 8 pounds per sheep. This fleece is a superb combing greasy merino, and valued in Sydney at 9*d.* (18 cents) to 10*d.* (20 cents) per pound.

Sample 8, Galga, Coonamble.—In the Western Liverpool Plains district of New South Wales, 300 miles north from Sydney; grown on open grassy plains of chocolate soils, interspersed with belts of scrub and slight ridges on the western water-shed of the colony at the head of the Castlereagh River, flowing into the Darling, and at an altitude about 900 feet above the sea-level; sheep fed on natural indigenous grasses only; station situated in latitude 31° 7′ S., longitude 148° 44′ E., having an average mean rain-fall of 19.80 inches, and an area of 142,000 acres, carrying, generally, 68,000 sheep, breeding and fattening. This fleece is a strong combing merino, bred on fattening country from the finer Mudgee type of sheep; used largely in London manufactures, and a fair specimen of western and northwestern interior wools average value in Sydney, 1887–'88, 7½*d.* (15 cents) to 8½*d.* (17 cents) per pound. All these exhibits belong to the Sydney, New South Wales, market, and indicate a class of merino wools suitable for United States requirements. The values are, at Sidney, ruling prices for last season, and, as a general rule, London values show an advance of 10 to 20 per cent. upon quotations given.

Sample 9, Killeen.—A second combing cross-bred fleece in grease from the northeast district of Victoria, grown on heavily timbered, but fair grazing country; value in Melbourne, 1887–'88, 7½*d.* (15 cents) per pound.

Sample 10, Decameron.—A first combing greasy merino fleece from the western district of Victoria, grown on splendid sheep country, mostly open plains, well watered and very rich soil; value in Melbourne, 1887–'88, 10¾*d.* (23 cents) per pound.

Sample 11, Bull's Plains.—Grown in the Riverina district of New South Wales, near Cowea, 454 miles southwesterly from Sydney, near the Murray River and the Victorian border; very heavily grassed plains country, about 360 feet above the sea-level. Sheep paddocked and fed on natural grasses only, principally fattening. Station in latitude 35° 50′ S., longitude 146° 5′ E., having a mean annual rain-fall of 17.68 inches, and an area 24,000 acres, carrying over 15,000 sheep. These Riverina merino sheep have very large frames and carry heavy fleeces. The wool from the Riverina and Southern districts of New South Wales finds its way principally to the Melbourne markets. It is a first combing, greasy merino fleece, and an average sample of these wools. Value in Melbourne, 1887–'88, 9½*d.* (19 cents) per pound.

Sample 12, $\frac{H.L.A.}{A.}$—A first combing, greasy, cross-bred fleece from the northwestern district of Victoria, grown in a good fattening district, in open country interspersed with belts of timber. Exhibit burry. Value in Melbourne, 1887–'88, about 11¼*d.* (22 cents) per pound.

Sample 13, R.*—A supercombing, greasy merino fleece, from the western district of Victoria, grown on very rich soil and open plains country. Value in Melbourne, 1887–'88, 12¾*d.* (25 cents) per pound.

Sample 14, Kanumbra.—A first combing, greasy merino fleece from the northeastern district of Victoria, grown on heavily timbered but fair grazing country. Value in Melbourne, 1887–'88, 9*d.* (18 cents) per pound.

Sample 15, Woodside.—A first combing, greasy merino fleece from the western district of Victoria, grown on rich soil and open plains country. Value in Melbourne, 1887–'88, 9½*d.* (19 cents) per pound.

Sample 16, $\frac{T.T.}{W.}$—A fine combing, greasy merino fleece from the northwestern district of Victoria, chiefly a fattening district. Value in Melbourne, 1887–'88, 9*d.* (18 cents) to 10*d.* (20 cents) per pound. They show the class of wool produced in Victoria, of which Melbourne is the chief depot. They are suitable for United States markets.

Sample 17, Paratoo, South Australia.—Grown 185 miles north of Adelaide, on the Gowler water-shed. Sample of 191 bales, combing, greasy merino, sold in Adelaide, 1887–'88, at 6¼*d.* (12 cents) per pound. This station cut 147,000 fleeces that year. Stud flocks averaging 8 pounds 7 ounces per head.

Sample 18, Hill River stud flock, South Australia.—Grown 90 miles north of Adelaide, in the Gowler district, strong combing, greasy merino. Value at Adelaide 10*d.* (20 cents). This station cut over 50,000 fleeces, 1887–'88,

giving an average, including breeding ewes, of 9 pounds 4 ounces of wool per sheep, whilst stud-rams cut from 15 pounds 10 ounces to 20 pounds 1½ ounces, and the clip realized from 11*d.* (22 cents) to 12*d.* (24 cents) per pound in the grease.

Sample 19, Canowie, South Australia.—Grown 190 miles north of Adelaide, toward the Gowler ranges, on rolling downs country and chocolate soil. Strong combing, greasy merino fleece valued in Adelaide at 8*d.* (16 cents) to 10*d.* (20 cents) per pound. This station cut over 52,000 fleeces last year, giving an average of 9 pounds 14 ounces of wool per sheep, and 3 pounds 13 ounces per lamb, which is an excessive return from an almost exclusive breeding. Flock has maintained a great reputation for many years.

Sample 20, Hill River stud flock, South Australia.—Strong combing, greasy merino, subject to similar remark as No. 18, from the same flock. These exhibits from South Australia represent the very strong, lustrous merino, cultivated on particularly rich, fattening country, and being within a radius of each other near Adelaide, may be described as grown approximately in latitude 24° S., longitude 138° 30′ E., and at an elevation of 1,200 feet above the sea-level; mean average rain-fall of 21 inches. Great competition exists between these renowned flocks annually as to their respective yields, weights of fleece (in grease and scoured), and market values realized.

Sample 21, Buccleuch, New Zealand.—Grown on downs country; light, loamy soil, laid down with English grasses in the Canterbury district; described as fine combing, greasy merino. Value in Christchurch, season 1877–'88, at 10*d.* (20 cents) per pound.

Sample 22, G. H. Bangor, New Zealand.—Grown in plains; country light; soil laid down with English grasses in the Canterbury district; described as fine quarter-bred Leicester and merino. Value at Christchurch, season 1887–'88, at 10½*d.* (21 cents) per pound.

Sample 23, Gunn, New Zealand.—Grown on high altitude, on rich, loamy soil; laid down with English grasses in the Canterbury district; described as fine-bred Leicester and merino. Value at Christchurch, 1887–'88, 10*d.* (20 cents) per pound.

Sample 24, G. H. Bangor, New Zealand.—Grown in the same country as No. 22, but described as coarse, half-bred Leicester. Value at Christchurch 10*d.* (20 cents). The New Zealand exhibits represent classes of wools grown in different climates and pastures. The average rain-fall in the Canterbury, New Zealand, district is given at 24 inches.—SYDNEY, *August 6, 1888.*

G. W. GRIFFIN,
Consul.

GERMAN IRON PRODUCTION.

The German iron production during the first six months of the current year is officially reported as follows:

	Tons.
Puddled pig and spiegel iron	1,050,860
Bessemer pig	191,029
Soft steel	617,941
Foundry pig	240,884
Total production of pig-iron	2,106,714
Total production during same period, 1887	1,748,481

The advancing quotations for industrial shares, notwithstanding the general situation of the iron and steel industries, is far from being satisfactory. The cause of the unsatisfactory condition of these industries is the high price for raw material. In this respect the different departments—coal, coke, ores, pig-iron, rolled iron—are shifting the responsibility from one to another. During the last eighteen months the following price advances have taken place: Coal, 10 per cent.; coke, 25 to 43 per cent. The price of puddled pig has risen from 41 marks to 50 marks, although that price has declined again of late.

RAILROADS IN COSTA RICA.

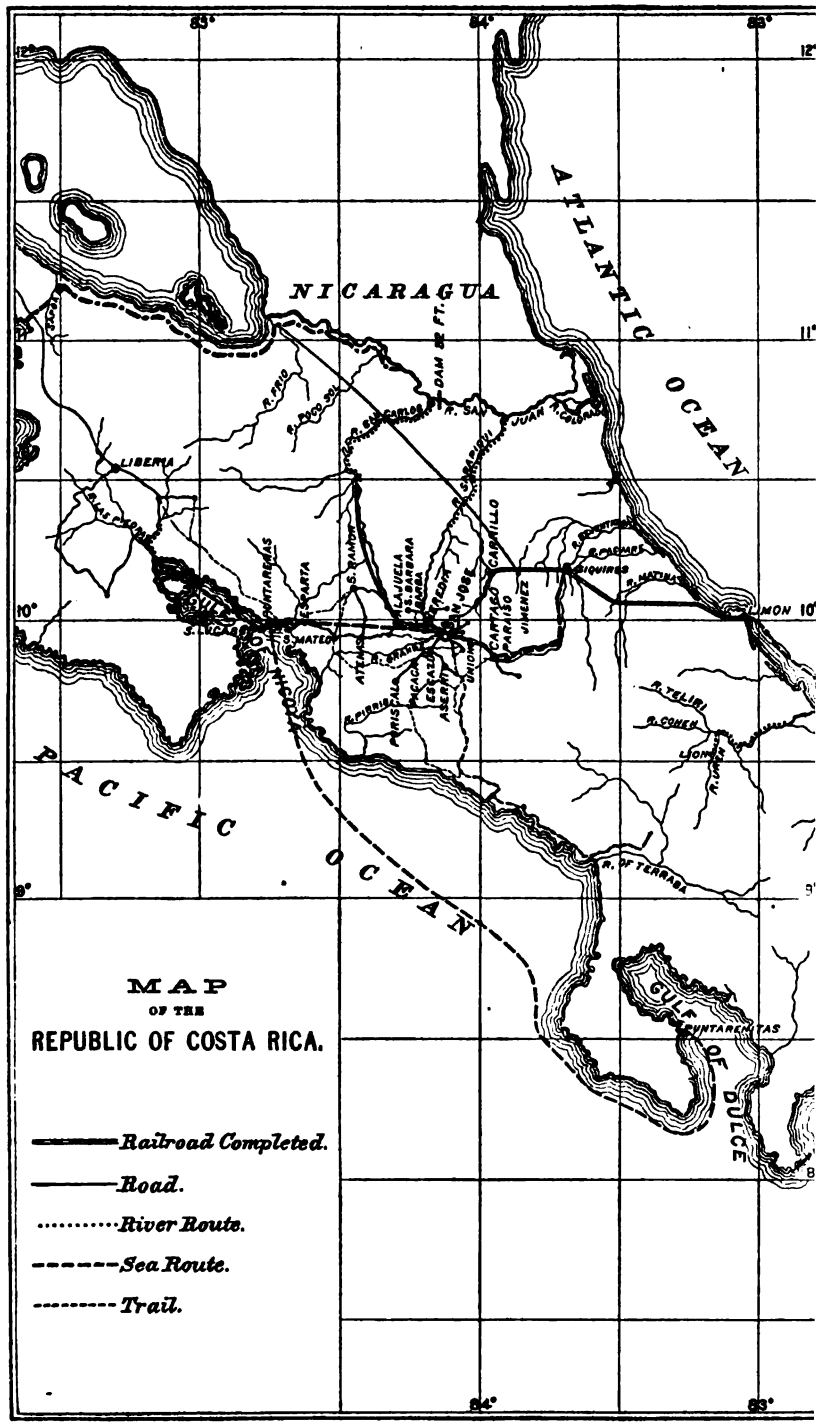
The railroads already completed in Costa Rica are:

1. From Port Limon to Corrillo, 70 miles—Corrillo being connected with San José by a steep mountain cart-road, a distance of 28 miles.

2. The road from Cartago to Alajuela, passing through San José and Heredia; total length, 25 miles.

3. From Puntarenas to Esparta, 12 miles—Esparta being connected with Alajuela by a mountain cart-road, a distance of 35 miles.

To complete the connection with Port Limon, there is now being constructed 50 miles of new road from Cartago to a point near Siquires, on the Reveutazon river. This new road is about one-third done. According to the terms of the contract with Mr. Minor C. Keith (contractor), it should be completed August, 1889, but Mr. Keith has had many difficulties to contend with, and it is not probable that it will be completed before August, 1890. The road from Port Limon to Corrillo (No. 1), from Cartago to Alajuela (No. 2), and the new line from Cartago to Siquires, together with the wharf at Limon, have been transferred to and are owned by the "Costa Rica Railway Company (Limited)," of London. The Government of Costa Rica also granted to said company 800,000 acres of unimproved lands. The Government now owns, however, one-third of the stock of said company. The Government also owns and operates the railroad from Puntarenas to Esparta (No. 3). To preserve the trade of California with Puntarenas, it is necessary that the road from Esparta be extended to the interior. Otherwise, when through connection is made with Port Limon, upon the completion of the missing link from Cartago, all trade will go by way of Port Limon.


NICARAGUA
ATLANTIC OCEAN
PACIFIC OCEAN
LIBERIA
SAN JOSE
CARTAGO
LIMON
P. OF TERRABA
GULF OF DULCE
PUNTARENAS
MAP
OF THE
REPUBLIC OF COSTA RICA.
Railroad Completed.
Road.
River Route.
Sea Route.
Trail.

This is important to San Francisco, and her business men could well afford to obtain from the Government of Costa Rica the transfer of the line from Puntarenas to Esparta and extend the same to the interior. If, however, the Nicaragua Canal is to be opened, and it is found advisable to follow the line mapped out by Mr. Menocal in 1885, I consider it of utmost importance to the trade interests of the United States to secure a railroad charter from this Government to run said road from the valley of the San Carlos River to San José. It is to be observed that Mr. Menocal (see page 26 of his report) proposes to build a dam 52 feet high at Ochoa, just below the point where the San Carlos empties into the San Juan River. The San Carlos is now navigable, I understand, by small boats to the "muelle" (wharf), some 30 miles. From this muelle to San José is some 60 or 70 miles. When the dam of 52 feet is built at Ochoa the San Carlos will be navigable much higher up. The San Carlos country is considered the finest section of Costa Rica. The lands are said to be of inexhaustible fertility and well adapted to the growth of bananas, cacao (chocolate bean), and cattle. At present there is no outlet to this section and it is undeveloped. A grant of lands along the railroad could be most probably obtained and would prove valuable, but, what I consider of far more importance, would give the trade of this country to the United States. The proposed road connecting with the canal would connect with steamers going both to ports on the Atlantic and on the Pacific. The aggregate exports and imports of Costa Rica last year (1887) was $11,000,000, of which the larger portion goes to and comes from Europe, and necessarily so when the ways of communication are owned in Europe. To illustrate: The freight on coffee per ton from Puntarenas to New York is $26.40; to England, £3. From Limon to New York, $10; from Limon to England, £1 10*s*. It is also greater from Puntarenas to San Francisco than to England, although I have not the exact figures. I think it very important to obtain this railroad charter to the San Carlos as soon as possible; otherwise it will be taken by an English company. Costa Rica is very anxious to have the canal on the route of Mr. Menocal's survey of 1885, rather than on the new line now being surveyed, and in making arrangements with her for the former route this railroad charter and grant could be secured on favorable terms. It may be that an effort will be made by English capital to secure this or some other railroad charter at the next Congress, which convenes in May. I have had some slight intimation that there is now a project on foot for a survey for a new railroad by an English Company, but whether it is in connection with the grant of the 800,000 acres of land above referred to, or another scheme, I have not been able to learn.

I inclose a small map upon which I have marked the road now being constructed from Cartago to Siquires, the proposed road from Esparta to San José, and from the muelle, on the San Carlos, to San José.—SAN JOSÉ, COSTA RICA, *March 30, 1888.*

J. RICHARD WINGFIELD,
Consul.

COMMERCIAL ECONOMY OF HAMILTON, ONTARIO.

COAL.

Near $200,000 worth of coal was imported last year, a duty of $49,089 being collected upon soft coal. The importations this year will be heavier than for any preceding year, due not only to increased consumption by increase of population, but also to the fact that dealers were caught last year with inadequate supplies, and every yard was swept clean by the close of the winter season. There is, in consequence, a tendency to go to the other extreme this year of overstocking the market. The increased supply from United States collieries, in the judgment of leading dealers, may be safely estimated as high as 25 per cent. over the fuel import of last year. All local dealers have increased their storage room by building additional coal sheds. The removal of the duty on hard coals had no perceptible effect upon prices, the market being controlled by the coal combine and coal exchanges in the principal coal markets. In city contracts for large orders the price is fixed by a committee of the coal exchange in some instances, and when the price is fixed the contract may be awarded, either by auction or by drawing lots. Such a contract was sold by auction last year in one leading city, and the premium paid was divided evenly among the members of the association. The local and Dominion government contracts are open to competition. The price for the Ontario government contract for the insane asylums last year was $4.98 per ton of egg coal, then being sold at retail for $6.30. This contract, however, was filled in the spring when business was dull.

COTTON AND COTTON FABRICS.

An importation of cotton manufactures to the value of $83,772 from Great Britain, against $38,658 of imported values in cotton and fabrics from the United States shows that the latter is still unable to compete with England. Cotton shirting, which ten years ago cost here from 12 to 13 cents a yard, is now sold for 75 cents.

EARTHENWARE.

The bulk of it is imported from Europe, only $2,842 in values of imported earthenware being credited to the United States. The duty collected, mainly from European importations, amounted to $20,410 for the year. The duty is 35 cents. The whole duty paid in 1887 on brown or colored earthen or stone-ware, and Rockingham ware, and on all granite or ironstone ware was about 10 cents per family.

FISH.

Fish, including oysters, to the value of $32,639 were imported from the United States—chiefly from Boston and Portland. The oysters came generally from the latter port.

GROCERIES, PROVISIONS, AND FRUITS.

The comparatively large importation of breadstuffs from the United States includes such goods as biscuits, crackers, ginger snaps, cracked wheat, and other cereals prepared in a superior manner in the United States. Under the head of provisions, of which $26,490 were brought over last year, is included canned goods (in which American packers beat the world), such as meats and soups, with hams, bacon, and lard from Chicago. Baking powders come chiefly from Detroit, Chicago, and Albany. Considerable flour used to be imported from Minnesota, but the large wheat supply from Manitoba and the increase in the number of roller-process mills now confine the trade to the native product. Large importations of starch are made annually—chiefly from Oswego. What sugars are not supplied from Montreal refineries are bought out of bond in New York, as coffees and teas are supplied, which are enumerated as importations from the United States. The bulk of pickles are brought from England, not because of lower price, for they are costlier, but by reason of the reputation of the English pickle. In dried fruits the United States have the call over other countries. Finer classed goods, such as apricots, plums, and raisins, are imported from California, whose products are gradually supplanting Spanish goods. As has been already mentioned, the green fruit importations have been largely increased by the removal last year of the Canadian duty on green fruits. California, Delaware, and the Southern States are the places of production.

HATS AND CAPS.

"Honors are easy" as between England and the United States in the extent and value of imported hats and caps. Nearly every furnishing and hat firm handles some American goods—the styles being preferred by many. The English good are bought generally through jobbing houses in Toronto and Montreal. Hats and caps are cheaper now than when the duty was lower—probably due to American competition.

JEWELRY, CLOCKS, AND WATCHES.

The class of jewelry imported from the United States is generally of rolled gold, bought of Rhode Island manufacturers. The Meriden Britannia Company has established a factory in this city to escape, as it is alleged, the American tariff on nickel, which is free in Canada. The wares of this factory are handled by all local jewelers. Except a few French clocks all the clocks sold here are imported from the United States—chiefly from Waterbury, Conn. Of watches only the movements are brought in from the United States. All the manufacturers are affiliated with the Toronto Association. There are three watch-case factories in Canada. Two of the three are members of the Toronto Association. At their last meeting article 7 provides as follows: "That this association enter into no contract with any Canadian manufacturer or manufacturing association of watch cases un-

til such manufacturer or association shall have become affiliated in membership with either the American Association of Manufacturers or with this association."

LEATHER BOOTS AND SHOES.

Boots and shoes of the coarser material and fashion are almost exclusively made in the Dominion. The finer classes of goods are imported from the United States, and nearly all dealers handle American goods. Leather of finer finish is also imported, especially for harness and saddlers' goods. Patent leather is made at a factory at Oakville, near this city. Rubber goods are imported from the States, and some supplied from Montreal. The American-made kid and calf shoes are preferred because of their neater finish and more dressy appearance.

METALS AND HARDWARE.

Builders' hardware and tools and small agricultural implements are the chief importations from the United States. The English importations consist largely of merchant bar iron and cutlery. The United States importations are about equal in this part of Canada. The steady development of home enterprises, like the Peterboro' Lock Company, is reducing the importation of builders' hardware. The American Screw Company, of Providence, has built a large factory in this city because of the low tariff on iron. The Hamilton Steel-Wire Nail Company has been formed, having for its object the manufacture of all standard sizes of common and barbed steel nails, molding nails, brads, copper, iron and steel shoe nails, and rivets. Six new machines of improved pattern have been purchased in the United States. These are automatically fed and manufacture the nails from the wire. Bells for churches and buildings are imported from the United States. The domestic demand for bells would justify the establishment of a local foundry. Cast-iron hollow-ware, granite, and enameled sheet-iron vessels are imported largely from the States. The saws imported from the States are mostly hand-saws. There is a factory at Galt, which is run to its full capacity supplying circular and hand saws. The company is an American company. Copper, zinc, and tin are generally imported in sheets and manufactured here. Manufactures of brass are imported from the United States, such as plumbers' goods, lamps, chandeliers, etc. An American firm has built a factory here for manufacturing lanterns, pressed and stamped ware.

MUSICAL INSTRUMENTS.

In this class of importations there are credited to the United States values to the amount of $16,084, against some $3,000 from Europe. The bulk of the importation from the States consist of pianos and cabinet organs. Brass and reed instruments are generally brought from France and Germany.

SEEDS.

There were imported from the United States, during the past year, $35,252 of seeds, such as clover, timothy, and other grasses, onion, corn, cucumber, and melon seeds. An increased importation is the result of crop failure in the Dominion, coupled with the removal of the Canadian duty on seeds, though, as before stated, the demand is affected by crop results rather than by high or low tariffs.

WOOD AND WOODEN WARES.

Hubs, spokes, and fellows, and some buckets, are imported, together with hard woods for cabinet work, hickory for spokes, walnut, cherry, etc. Carriage makers throughout the Dominion are compelled to import hickory for spokes, rims, and other parts of carriages from the United States, because they can not get it in Canada, and the import grows larger year by year as the manufacture of carriages increases. Every stick of imported hickory is of second growth, and almost the whole of it grows in Ohio and Indiana; and much of the imported walnut has been planted in the United States by men not yet old. Herein lies a suggestive hint to tree-planters.

WOOLEN MANUFACTURES.

Woolen fabrics to the value of $321,521 were imported last year from Great Britain, and $12,340 from other European countries, against only $4,000 from the United States. The European importations were made up largely of tweeds, underwear, stockings. How the American merchant and manufacturer may enlarge his trade with Canada may be summed up in four words, viz, "good goods" and "low prices." The American goods excel in quality. The trouble with the price is to counterbalance the Canadian tariff on one hand and English cheap labor on the other. As was stated in a previous report, the tariff constitutes the chief barrier to a larger trade. While many consumers in Canada, especially agriculturists, wish the tariff reduced, or entirely removed, the manufacturers, in the main, are clamorous for its retention. Pending the discussion of the commercial-reciprocity issue at the last Parliamentary session, one Ontario representative quoted replies from an extensive correspondence with Hamilton manufacturers, all to the effect that any modification of the tariff policy would be hurtful. A sample of these replies is appended, as for example:

Commercial union would kill our forge and preside at the funeral of our rolling mills. — *T. D. Beddoe, manager of the Hamilton Iron and Forging Company.*

Commercial union would utterly destroy the pipe industry and certainly lead to annexation. — *Alex. Gartshore, Canada Pipe Works.*

Under commercial union we would have to shut down our works entirely. — *Ontario Rolling Mills Company.*

Commercial union would destroy our business in carriage and saddlery hardware and scales, and would seriously damage stove business. — *Burrow, Stewart & Milne.*

Unrestricted reciprocity would effectually close the canning industry. In most cases farmers receive for their products twice the price paid in the United States, particularly tomatoes. — *Rising Sun Canning and Pickling Company.*

Unrestricted reciprocity would close every sewer-pipe factory in Canada. — *Canada Sewer Pipe Company.*

The furniture trade would be severe sufferers, more particularly the manufacturers, for the following reasons: The American factories are now nearly all large joint stock companies with large capital, and have all the advantages in purchasing that capital gives. From their large output they have the division of labor so fine that the cost of production would be and is much less than we can hope to arrive at here with a limited production and output. Our manufacturers are only now getting nicely on their feet. The large concerns would wipe them out before we could change our style of business to the change of market. — *J. Hoodless & Son.*

Unrestricted reciprocity would be hurtful to the country and ruinous to our business. — *Osborne-Kibbey Manufacturing Machinists Company.*

We consider that commercial union would be most disastrous to our interests. — *Hamilton Cotton Company.*

We believe it would destroy the manufacturing part of it, and resolve us into traders or agents for western houses. — *F. W. Fearman, pork, bacon, and lard packer.*

We should have to share the market here with little prospect of entering the American market; the effect would be ruinous. — *B. Greening & Co., wire workers.*

Were unrestricted reciprocity or commercial union to come into force we would at once remove our business to the United States. — *D. Morton & Son, soap makers.*

CROP STATISTICS.

With good crops in Ontario and the subsidence of political excitement in the United States next year, the prospect is fair for an increased trade. The report of the Ontario bureau of statistics for August, compiled from official returns to the 25th of June, 1888, shows the fall wheat yield to be below the average. Reports regarding spring wheat are more favorable than for some years past. The only injury it received worth mentioning has been from slight drought in a few places. Upwards of 80 per cent. of the reports are favorable. The area sown, however, shows a decrease from 484,821 acres, in 1887, to 367,850 this year. Barley is reported good as regards yield and size of berry. Oats give a satisfactory return in the western lake counties of Ontario and in a large portion of the west midland group. Reports are unfavorable from the east midland and St. Lawrence districts. Comparatively little rye is grown in Ontario. Generally it has proved a good crop. Peas are reported good all over. The presence of the pea-bug is reported only in some of the Lake Erie counties. Corn is a better crop than for years past, while most encouraging reports are given of beans. Roots and fruit are fairly good. — HAMILTON, *August 24, 1888.*

ALBERT ROBERTS,
Consul.

GRAIN CROPS IN EUROPE.

The International corn market was held at Vienna August 26, and was more largely attended than in the sixteen former years. About 9,000 persons from all countries of Europe were in attendance at the opening, notwithstanding that on the same day and hour another international corn market had been opened at Dijon, which prevented many Frenchmen from

coming to Vienna. After the official speeches of the representative of the Government and the president of the chamber, the secretary of the latter, M. Leinkauf, read the customary report upon the crop estimations of all important countries. It is the sixteenth year that this report has been compiled, and its general accuracy is recognized.

The secretary of the Corn Bourse, M. Leinkauf, beginning with the corn crop of Austria and Hungary, said that the provinces of Hungary, excluding Austria, had cultivated with wheat an area of 2,790,571 hectares. It is estimated that this will give 27 per cent. more than a full average crop, or 3,500,000 hectoliters more than the average, only 8½ per cent. of the area being under the average. In respect of quality, the weight is above the average, while the color is good.

In Austria the area cultivated with wheat amounted to 1,164,067 hectares, of which 50 per cent. have yielded a crop of more than average. The surplus of wheat for export will amount to about 1,000,000 hectoliters.

The crop of rye in Hungary extends over 1,411,570 hectares, of which 11 per cent. (Transylvania) show a crop over the average, and 75 per cent. average. It is estimated that Hungary has in this cereal a deficit of 2,750,000 hectoliters. Precisely the same is the case in Austria. The rye area comprises 2,009,490 hectares. The crop is estimated at 2,250,000 hectoliters less than the average.

The result of the barley crop is not very satisfactory. Hungary has an area cultivated with barley of 1,048,981 hectares, yielding 2,500,000 hectoliters less than the average; the quality is first rate. In Austria an area of 1,131,678 hectares has been cultivated with barley, of which 30½ per cent. gave a crop of over the average, 18½ per cent. average, and 51 per cent. below the average. The deficit is estimated at 750,000 hectoliters.

In Hungary the crop of oats is not quite satisfactory. One million two hundred and fifty-nine thousand six hundred and seventy hectares have been cultivated, of which 14 per cent. gave more than the average, 30 per cent. average, and 56 per cent. less than the average. The total deficit is estimated at 3,000,000 hectoliters. In Austria, on the other hand, 1,874,771 hectares were cultivated with oats, which gave a surplus over the average of more than 1,000,000 hectoliters. The prospects of the maize crop are very good in Hungary, in Austria below average. The total result in Austria-Hungary gives a surplus of 4,100,000 hectoliters of wheat ready for export, and a deficit of 5,000,000 hectoliters of rye, of rather more than 3,000,000 hectoliters of barley, and 2,000,000 hectoliters of oats.

The average crops during the last ten years in Austria and Hungary, compared with 1888, are given in the following figures:

Hungary:	In 1888, Per cent.
Wheat, average 36,000,000 hectoliters (= 100)	110
Rye, average 17,500,000 hectoliters (= 100)	85
Barley, average 16,000,000 hectoliters (= 100)	84
Oats, average 20,000,000 hectoliters (= 100)	85

Austria:	In 1888, Per cent.
Wheat, average 15,000,000 hectoliters (= 100)	107
Rye, average 27,000,000 hectoliters (= 100)	92
Barley, average 17,500,000 hectoliters (= 100)	96
Oats, average 34,500,000 hectoliters (= 100)	103

The results of the crops of the other countries have been compiled by an official commission, which gives the following figures, the average taken at 100:

Country.	Wheat.	Rye.	Barley.	Oats.
Austria	107	92	96	103
Hungary	110	85	84	85
Prussia	90	74	94	96
Saxony	95	82	90	90
Bavaria, provinces of Franconia and Suabia	88	79	97	107
Palatinate:				
Upper	102	80	100	120
Lower	75	65	100	105
Baden	85	60	85	110
Würtemburg {	76	.....	.....	.....
	95	70	100	109
Mecklenburg	98	80	100	100
Denmark	80	90	130	125
Norway and Sweden	95	90	95	90
Italy	75	.....	.....	65
Switzerland	78	78	.....	100
Holland	82	72	87	107
Belgium	82	.....	90	.....
France	80	85	85	100
Great Britain	78	.....	99	100
Russia:				
Padolia	80	60	.....	100
Bessarabia	125	75	100	51
Poltava	87	72	82	92
Middle	85	80	75	90
Central Russia:				
Cherion	120	120	120	120
Courland	95	85	90	90
Esthonia	92	82	82	72
Roumania:				
Moldavia	130	130	125	.....
Little Wallachia	100	80	80	80
Great Wallachia	120	100	95	90
Servia	120	90	90	70
Egypt	110	.....	75	.....

The crop of wheat in India was estimated in 1887 at 6,390,000 tons; in 1888 it is estimated at 7,255,000 tons, the average crop is being estimated at 7,197,000 tons. The United States of America had in 1887 456,000,000 bushels of wheat and 1,456,000,000 bushels of maize; in 1888 the estimates are 420,000,000 bushels of wheat and 2,000,000 bushels of maize.

It is reported from Hungary that large exports of wheat are taking place at advancing prices.

CHINESE SALT.

Chinese salt is produced in the flat, marshy country on the east coast of Kiang-Su province. These marshes cover an area of several hundred square miles. There are thirty-six principal salt-flats. It is all produced by evaporation in flat pans heated by burning dry seeds and brushwood, and is of two qualities only, the upper layer, a brownish-white, the superior, and the lower a dark-brown, the "peoples' salt." It is principally evaporated in the autumn and spring. The cost of production is 2 cash per catty; 1,040 cash are equal to a Mexican dollar; a catty is 1⅓ pounds. The salt is sold to the merchants at a fixed rate of 3 cash per catty, which is determined by the Government. The duty (lekin) and official charges thereon amount to about 45 cash per catty. It is retailed at from 50 to 52 cash per catty, according to locality.

Salt cannot be sold or consumed in the province where it is produced. This law is with a view of increasing the "squeezes" and emoluments to the Government officials. Kiang-Su salt is exported principally to the provinces of Anhui, Kiang-Si, Hupeh, and Honan. Evaporated salt is produced also in the provinces of Chê-Kiang, Szechuen, Kuantung, and Shantung.

Ching-Kiang receives its salt from Chê-Kiang, as it is nearer and the transportation cheaper. Salt is exported in junks of from 400 to 1,000 piculs (a picul is 133⅓ pounds) carrying capacity, and is packed in straw bags of 84 catties' weight.. Merchants desiring to engage in the salt business must produce the best references at the salt commissioner's yamen at Yangchau. They must further deposit with this official a sum proportionate to their proposed transactions, which deposit, in each case, amounts to several thousand dollars. The permits to trade are drawn by lottery; in case of banks the deposit is refunded.

Each permit is for about 800 pounds of salt. The principal or official salt merchants obtain their licenses from the board of revenue at Peking, and they hold during their lives. They are accounted rich men, reside mostly at Yangchau, and live in fine style, fine houses, and have numerous servants. The business is, therefore, considered lucrative. There are scarcely ever any failures in this trade; it is carefully and fairly conducted, and only by merchants of the highest standing. A very small quantity is smuggled, as all craft are carefully and frequently searched as they pass along the river and canals. Sometimes it evades the revenue when carried in foreign steamers and sailing vessels.

The salt commissioner resides at Yangchau, a mandarin of the third rank, and wears a blue button. His fixed salary is 4,000 taels per annum; a tael is about $1.30. The office is considered to be worth, in one way and another, 30,000 taels per annum. How this is managed I can not venture to say. The imperial treasury at Peking derives a large revenue from the salt trade. It is, indeed, one of its chief dependencies. The manufacture

and the traffic give employment to many thousands of people. The wages of the people employed on the junks in the transportation of salt are $2 and $3 per month. The captain, or chief man of the boat, receives $4 per month. The workmen at the salt flats receive from $3 to $4 per month, the employers providing them with rice, which is their chief food. Their wants are few, their expenses nominal, and they live on and are contented with these wages.

In some cities salt is peddled about the streets by blind men, who have the monopoly of this business. No one is allowed to interfere with them or enter into competition. Though I requested information as to the quantity of the annual product of salt from all the works, or any of them, the value, etc., I was unable to obtain it, and therefore can not furnish in these notes any statistics. The quantity and amount of sales, however, must be very great to supply this vast population, to create such a revenue, and to enable all those concerned in the management and trade to grow so rich.

In evidence of the large sums realized in the salt manufacture I read in a late number of the Peking Gazette that the salt revenue of the province of of Chê-Kiang was required to forward the following assessments to Peking during the current year: Peking subsidy, 200,000 taels; imperial household fund, 50,000 taels; frontier defense expenses, 60,000 taels; and for the purchase of ginseng, 10,000 taels.—CHING-KIANG, CHINA.

A. C. JONES,
Consul.

GERMAN PLANTATIONS IN SAMOA.

The German plantations in Samoa comprise the greater part of the cultivated land on the north side of the Island of Upolu. Four of them are in the immediate vicinity of Apia, to the south and east, and the remaining two are further down the coast, towards Savaii, the largest (Mulifauna) covering the entire western end of the island, with an area of 3,260 acres and a sea frontage of more than 6 miles. Formerly there was a plantation on Savaii planted with cocoa-nuts, but this has been given up, the trees bearing poorly, owing to the recent volcanic origin of the soil, which is too strong for vegetation.

The total area of these plantations is 9,260 acres. Their natural features are very diversified; from the sea they extend far up the mountain sides, down which flow numerous large streams. They have been laid out with great care; broad avenues intersect them and lead along the coast, and in beauty of scenery and of rich fertility the views among these can not be surpassed.

The plantations are highly cultivated, and are capable of producing anything that will grow in the tropics. They are mainly planted with cocoa-nuts, for the production of copra, the dried kernel of the nut. The annual production of this is between 500 and 600 tons.

The clearing of the land for the plantations is a laborious operation, for the land in Samoa is densely wooded with a tough native growth. There are also many rocks, which prevent plowing. After clearing, cotton is planted, and this is grown for three years; then cocoa-nuts are planted and grass is sown, and until the trees are large enough to allow cattle to be run among them some cotton is still gathered. After six years cattle are admitted, for by this time the trees have grown and cattle can not reach the heart, the only part which they can hurt. The seventh year the trees begin to bear, and at fifteen years after planting they attain their prime. The grass grows luxuriantly, for drouth is unknown in Samoa, and cattle find among the cocoa-nut trees rich feeding-ground. On the largest two plantations there are 1,600 head of cattle, many of them of good breed, imported from New Zealand and the Australian colonies. There are also some fine horses upon them.

Next to cocoa-nuts and cotton, coffee is the most important product of the plantations, and its cultivation is being increased, for it is the best paying crop. At the Utumapu plantation 300 acres are under cultivation with coffee, and 150 acres are being prepared for it. Last year the coffee crop of this plantation was 90,000 pounds. The coffee is cleaned at a mill run by water-power, when, after being rolled between two stones, it is trodden in vats by labor boys; it is then dried by hot air. The coffee is of an excellent quality, rivaling the finest Mocha, and commands a good price in the Hamburg market, where it is chiefly sent.

These plantations are worked by imported labor, for the Samoans will not work. This labor is recruited chiefly from the islands to the west of here, the New Hebrides, Solomon, New Britain, and New Ireland islands; also from the Ellice and Gilbert islands, to the north. This traffic, of which so many dark stories have been told of cruelty, is not yet robbed of all its horrors, although the efforts of the English and German Governments have done much to lessen them. Many laborers are secured by questionable practices — enticed on board recruiting vessels by fair promises that are never fulfilled, or kidnapped by overturning canoes of the more venturesome who have come too near the vessels, and thus capturing the unfortunate natives while struggling in the water. German gun-boats sometimes help the recruiters, by delivering over to them prisoners taken in chastising native villages. As a rule, however, the labor trade is humanely conducted by the German labor vessels coming here. The vessels belong to the Deutschen Handels und Plantagen Gesellschaft, known as the German firm, which is the owner of the plantations here. The laborers are under contract for three years' service, at the expiration of which time they are to be returned to their homes. This, however, is sometimes not done, and the unfortunate people are landed among a hostile tribe who speedily kill or enslave them. Men, women, and children are recruited at wages of $3 a month, paid in trade. In New Britain, before shipping for Samoa, the laborers go before the German commissioner there, who has the functions of consul-general, and

sign a regular contract with the agent of the firm. When there is no commissioner the contract is made by the agent and inquired into by the German consul later.

On arrival at Samoa the laborers pass an examination before the consul, and great care is taken that none come on shore against their will. They are well cared for upon the plantation. A physician visits each plantation at least once a month. They are well housed and fed on rice, biscuits, and yams, bread-fruit, taro, etc., native food, which they prefer. Their hours for work are regular and Sundays are given them as holidays. There are about seven hundred and fifty of them upon the different plantations. The following is a list of plantations, with statistics of the same:

Mulifauna.—Area, 3,260 acres; 900 acres are under cotton in full bearing; the yearly production of this is 700,000 pounds. There are here 700 head of cattle and 560 laborers.

Vartele.—Area, 1,780 acres; 780 acres under cultivation with cotton, full bearing; 980 acres of young cocoa-nut trees; 20 acres under grass. Last year the cotton crop was 500,000 pounds. The plantation is worked by about 350 laborers.

Vaitele.—Area, 2,800 acres, nearly all under cocoa-nuts, the most of them in full bearing. Copra crop last year was about 400 tons. The whole plantation is used for cattle; number of cattle, 900; number of laborers, 156.

Vaivasa.—Area, 700 acres, all under cultivation; 150 acres cotton, balance in cocoa-nuts; number of laborers, 50.

Mutuatua.—Area, 270 acres; 70 acres cotton, balance under cocoa-nuts, all bearing; number of laborers, 34. This plantation is the private property of Theodore Weber, Esq.

Utumapu.—Area, 450 acres; 300 acres under coffee, balance cleared and being prepared for coffee; crop last year, 90,000 pounds. On this plantation are 1,200 cacao trees, now bearing. Number of laborers, 170.

HAROLD MARSH SEWALL,
Consul-General.

APIA, SAMOA, *August 15, 1888.*

WINE FROM BERRIES AND FROM DRIED GRAPES.

The want of a good wholesome and cheap domestic beverage is very general in the rural districts.

There are numerous factories in Germany which, under the name of "artificial wine" (Kunstwein), introduce beverages into the market which are intended to satisfy this want. But these factories of artificial wine have their very doubtful point, inasmuch as great quantities of their productions, when they get into the second or third hand, are sold as genuine wine.

In order to avoid paying a good price for an inferior article, the farmer may, with some attention and industry, prepare himself his own domestic beverage, and have thus a much better and cheaper article than he can buy in the factory under the name of artificial wine, or as wine, if he buys it from an agent.

For the manufacture of a good domestic beverage different sorts of fruits, the residuum of pressed grapes, wine lees, berry fruits (also some kernel fruits, as cherries and plums), and dried grapes may be used.

WINE FROM BERRIES.

Currants and gooseberries yield almost every year a good crop, and even on a small area of land they furnish so much fruit that, by adding the necessary water and sugar, a great quantity of wine can be produced. Whortleberries are very abundant in some districts.

The price of sugar being rather low the expenses are but small. For 1 hectoliter (nearly 26½ gallons, wine measure) of good domestic beverage, sugar for only about 7 or 8 marks is wanted ($1.75 to $2).

The berries contain too little sugar and, with the exception of thoroughly ripe blackberries and sweet cherries, too much acidity. The acidity must, therefore, be attenuated and sugar added. If too little water is used the wine becomes too sour.

At the exposition in Bruchsal, Baden, in April of this year, all the new sorts of price-wines and seven of twelve wines having received diplomas were attenuated with water in the proportions given below.

The wine becomes stronger or weaker according to the quantity of sugar added. By adding too little sugar the wine becomes weak and not durable.

The subjoined table shows the average contents of sugar and acid in the different sorts of fruit, and also the addition of water and sugar necessary for 10 liters of juice or 11 kilograms of fruit, in order to make either a weak kind of artificial beverage, a good table wine, or a liquor wine:

Fruits.	Contents in 100 parts of fruit.		Addition to 10 liters juice, or 11 kilograms of fruit.				
	Sugar.	Acidity.	Water—liters.	Sugar—kilograms.			
				Domestic beverage.	Table wine.	Strong wine.	Liquor wine.
Currants	6.4	2.1	30	4.2	5.8	7.4	1.3
Gooseberries	7.0	1.4	18	2.7	3.7	5.1	8.8
Blackberries	4.0	0.2	.....	0.8	1.2	1.6	3.0
Whortleberries	5.0	1.7	24	3.6	5.0	6.3	11.0
Raspberries	3.9	1.4	18	3.0	4.1	5.2	9.1
Strawberries	6.3	0.9	8	1.6	2.3	3.0	5.5
Red bilberries	1.6	2.3	35	5.3	7.1	8.9	15.2
Agriot cherries	7,5	1.3	16	2.4	3.4	4.5	8.1
Sweet cherries	10.0	0.4	.....	0.2	0.6	1.0	2.4
Plums	6.1	0.8	6	1.3	2.0	2.6	4.8

From the stone fruits the stones are to be removed before weighing them and before fermentation takes places. Strawberries, gooseberries, blackberries, and agriot cherries are particularly qualified for strong and fine wines. For the purpose of mashing the berries and removing the stones the fruits may be grated through sieves, the holes of which are small enough not to allow the passing through of either berries or stones. Then the mashed fruits are to be pressed out or soaked in water, as will be described below. The

latter proceeding is, of course, only possible with fruits which require a large quantity of water. During the process of mashing and pressing the fruits great care is necessary to prevent the dissolution of iron in the juice, as even very insignificant particles of it will give a bad taste to the wine and also a bad muddy color.

Iron wine-presses and the lower parts of the spindles are to be painted with iron varnish. In order to avoid the dissolution of iron, the soaking out of the residuum of grapes is to be preferred to the pressing. Sieves made of brass are preferable, but must be kept very clean. The riper the fruits the better the wine will be. Rotten fruits must be removed as much as possible.

The fermentation will be the quicker the nearer the degree of heat is to 30°, but the danger of the formation of acid of vinegar (acetic acid), lactic acid, slime, etc., increases with the heat. If the residuum is not kept in the liquid it often grows very hot by contact with the air, and injurious decompositions are formed. The most favorable degree of heat for fermentation is from 15° to 20° C., 12° to 16° R.

Berries picked in the hot part of the day are warm, and if gathered in large quantity in receptacles they often become very hot. In these warm, partly already injured berries, an alteration can take place which is injurious to the wine produced therefrom. Such fruits which ripen in summer should, for this reason, be picked in the morning or evening or on a cool day. In no case should they remain for any length of time in large filled up receptacles.

If the mash is too warm it ought to be brought to the correct degree as soon as possible by adding cold water.

There are cases where great quantities of grape wine were spoiled only because the grapes, though of very good quality, had been harvested in the heat and had been transported a long distance.

In those years in which the grapes are harvested in very warm weather there are always more poor wines than when the grapes are cool before they are put into the tubs. It has been observed that fermentation does not commence soon if the berries are picked soon after rain.

If the alcoholic fermentation at the correct degree of heat does not sufficiently commence within twenty-four hours there is danger that other dissolutions will take place, mucilage or lactic acid formation, or, in case of slow fermentation, even vinegar formation. The fermentation can be produced by adding compressed artificial dry yeast or fluid corn yeast, 50 grams of the former or about one-fourth liter of the latter to 1 hectoliter are in the first place added to one part of the mixture of sugar-water and juice or mashed fruits. As soon as this is in good fermentation it is mixed with the rest of the mash. As a matter of course only the very best and freshest yeast is to be used. Yeast of beer is of no use.

One of the greatest difficulties in preparing berry wines is caused by a too slow and often incomplete fermentation. This is produced either by the mash having been filled into a barrel smoked with sulphur, or by the forma-

tion of acid of vinegar at the beginning of the fermentation, or also by the berries not containing sufficient nutritious matter in proportion to the yeast necessary for the fermentation of the sugar.

Fermentation will be greatly accelerated by adding currants or raisins or cristated currants to the mixture of berries or their juice with sugar-water. From 1 to 2 pounds of currants or raisins may be added to 10 liters or 11 kilograms of fruits. They must be quickly washed with cold water, then cut, added to the mixture of juice and sugar-water, and left therein during fermentation. For 1 pound of raisins 1½ liters of water more may be added. The air is to be carefully excluded from the surface of fruits left standing after having been either lyed or washed, and also during and after the process of fermentation, else a part of the alcohol will turn into acetic acid, causing the wine to remain muddy and slimy and to receive a disagreeable taste. Besides this, wine containing much acetic acid does not agree with many persons. Generally, but especially with fleshy or slimy fruits, such as gooseberries, whortleberries, cherries, plums, etc., it is quite to the purpose to submit the mashed fruits, with an addition of a certain quantity of water and sugar, to the process of fermentation, but this requires great precaution, for as soon as the fermentation commences the husks will get on the surface and thus form a loose mass into which the air will penetrate, and in a short time produce acid of vinegar.

For producing berry wines or red wine on a large scale and when the wine ferments on the husks, the mash in a tub may be covered with a perforated tub-bottom and burdened with weights or tightly fastened in order to prevent the husks from rising, and then the whole may be covered.

In preparing berry wine on a small scale, but yet up to 1 or 2 hectoliters, it is best to use vessels of stone-ware for fermentation*.

On the lower part of these vessels there is a sink-bottom, and the mashed fruits contained in it are again covered with a similar one, water is poured in the channel on the upper part of the vessel and the cover laid upon it. The border of the latter must reach into the water and entirely exclude the air.

As soon as the fermentation has commenced the liquid is let off; it is then replaced by sugar-water, poured off again after twelve hours, water is first poured on it and then poured off again after a lapse of time. This is repeated until the required quantity of water is spent.

If correctly executed the husks are so thoroughly washed that it is altogether useless to press them. In the fluid collected in a tub or bottle the corresponding quantity of sugar not used yet is dissolved. Wines of blackberries, strawberries, sweet cherries, and other fruits for which little water is used may be left in these vessels until fermentation is completed. For the

* One containing a liter costs 30 pfennigs at Flochstetter & Kunst in Flöhr, near Coblenz, Prussia, and in their branch business at Offenburg, Baden, each sink-bottom of from 30 to 50 liters = 1 mark 20 pfennigs. Receptacles with this air-close may also be used for the preservation of sour cucumbers (pickles) and other preserves. Instead of water a little oil is now poured into the channel.

fermentation of fluids, fermentation vessels in glass may be used to advantage. Such air-tight vessels have been tried repeatedly last year, and they proved excellent. Grape and berry wines remained in a warm room in partly-filled vessels without being in any way injuriously affected by the air.

The family (home) beverage and the table wine must, as soon as fermentation ceases, be drawn off the lees and filled in a slightly sulphurated tub. The strong wines and liquor wines may be left on the lees until they are quite clear and then they are likewise to be filled into a slightly sulphurated tub, but they are filled in bottles only when they do not thicken or ferment any more. For the preservation of wines in bottles intended to stand, bottles provided with patent wire locks are to be selected, or else after the tops of the corks are cut off, and when quite dry the heads of the bottles must be dipped into hot paraffine.

Concerning cleanliness and the storing of the wine in barrels, the explanations given in respect to domestic beverage from dried grapes are to be observed.

DOMESTIC BEVERAGE FROM RAISINS.

One hundred kilograms of raisins are placed into a tub and cold water enough is poured over them just to cover them. After the lapse of twenty-four hours the fluid is to be drawn off in a tub. The now sufficiently soaked raisins are then pounded or pressed through a sieve provided with such wide holes that whole berries can not penetrate; water is then poured over them and removed after twenty-four hours. This is to be repeated until 4 or 5 hectoliters of fluid are collected in the tub, just according to the wished-for strength of the domestic beverage. The fluid is then left to ferment. The most favorable degree of heat for this is from 15° to 20° C. (12° to 16° Reaumur); a much higher or lower degree is to be avoided. If fermentation does not begin within twenty-four hours then 100 grams of good, fresh, compressed yeast or one-fourth of a liter of good liquid grain yeast are to be added to the hectoliter. Yeast of beer is not fit for use, but from 1 to 10 liters of yeast from good wine may be added to 1 hectoliter, provided it be very fresh and the wine has not been drawn off from it too late, at least in the beginning of February.

Old, especially slimy, wine yeast is carefully to be avoided, as it would make the beverage slimy and not clear. As soon as fermentation ceases the beverage is to be drawn off from the lees and put in a tub slightly sulphurated, one slice for 10 hectoliters.

If the beverage is desired to be a little astringent, which would render it more refreshing, 100 grams of vinous acid would have to be dissolved in a hectoliter. In the season of currants, to 100 kilograms of raisins about 10.15 kilograms, or to 1 hectoliter of domestic beverage before, at, or after the fermentation, 3.4 kilograms of mashed berries, or 3.4 liters of juice of currants, may be added. In a similar way sour-grape wine or cider, or mashed ripe and green apples (fruit fallen off the trees), or their juice, may

be used. The greatest cleanliness is to be observed in regard to all the vessels or receptacles into which currant wine or domestic beverage is put. The air is to be kept off carefully from the surface of the water on the raisins and from the fermenting and fermented fluid. The tub is to be covered with a lid; the bung-hole is to be closed by a clean sand-bag as long as fermentation lasts, and then by a well-fitting bung. Store-barrels must be kept full as much as possible, and must be bunged up with bungs of acacia, or oak wood, reaching at least 15 centimeters into the cask. The wrapping of the bungs and corks in rags must be avoided. For barrels on tap (*kuhnenheiter*) fungus guards are to be used, or the bung, after each drawing off, must be firmly fastened again. All bungs must be kept free of mold, fungi, or other injurious mushrooms, which, especially after this, are apt to spread over the beverage or wine. For this purpose the bungs are now and then to be dipped into spirits of wine entirely free of bad liquor, or, better yet, into a mixture of one part of acid *calcarea sulphurica* (*saurer schwefelsaurer kalk*), which may be kept ready for use in the cellar in a glass cylinder with glass cork. —KEHL, BADEN, GERMANY, *August 16, 1888.*

E. JOHNSON,
Consul.

EXPORTS FROM BORDEAUX TO THE UNITED STATES.

The following statement shows the value of declared exports from the consular district of Bordeaux, France, to the United States during the four quarters of the year ending June 30, 1888:

Articles.	Quarter ending—				Total for the year.
	September 30, 1887.	December 31, 1887.	March 31, 1888.	June 30, 1888.	
Argols and tartar	$33,344.32	$76,247.24	$44,269.14	$28,261.89	$182,122.59
Brandy	14,250.44	15,218.52	21,448.33	16,788.38	67,705.67
Corks	8,949.15	4,011.68	21,504.03	16,940.82	51,405.68
Drugs and medicines	4,840.23	8,711.72	6,834.82	10,663.15	31,049.92
Fruits and vegetables	142,762.02	137,264.47	41,561.25	54,577.51	376,165.25
Nuts	2,416.76	165,835.83	1,389.60	261.51	169,903.70
Oil (olive)	39,757.90	33,418.74	43,911.92	59,276.56	176,365.12
Paper	2,719.73	2,140.74	9,953.04	14,705.84	29,519.35
Prunes	98,653.56	332,711.64	35,645.16	9,558.09	476,568.45
Rags	.....	6,834.81	12,873.99	11,400.56	31,109.36
Sardines	194,580.53	144,954.98	51,516.98	37,748.99	428,801.48
Skins and hides	11,816.15	435.56	14,773.46	11,549.44	38,574.61
Vinegar	330.62	1,550.62	2,897.84	290.63	5,069.71
Wines	253,788.16	297,615.71	261,111.93	318,508.24	1,131,024.04
Sundries	284,774.00	289,909.52	153,182.97	193,227.49	921,093.98
Total (in U. S. gold)	1,092,983.57	1,516,861.78	722,874.46	783,759.10	4,116,478.91
Total for the preceding year	1,166,671.30	1,625,437.96	871,348.89	733,852.84	4,397,310.99
Increase	.....	.....	.....	49,906.26	.....
Decrease	73,687.73	108,576.18	148,474.43	.....	280,838.08

GEO. W. ROOSEVELT,
Consul.

GUATEMALA.

LOCATION.

Lying between the Bay of Honduras on the north and east Atlantic coast, the Pacific Ocean on the west, and bounded on the north by the Republic of Mexico and British Honduras or Balize, and on the south by the Republics of Salvador and Honduras, Guatemala forms the northern of the Central American States, and lies within the parallels of 13 and 18 degrees of north latitude.

CLIMATE.

By virtue of its mountainous configuration this Republic possesses a variety of climates, ranging from the torrid to an approximate frigid, but mainly a temperate and perennial spring-like zone.

On the coasts, or, more particularly, near to them, fevers prevail, owing to the intense heat and marshy soil, with stagnant pools in the midst of almost impenetrable jungles and forests. During the day ocean breezes purify the atmosphere, but at night the land breeze, coming down from the mountains, diffuses the malarial vapors and renders the region around and in proximity to the coasts unhealthy. These fevers, while prostrating and wearying upon the system, are not usually fatal. They partake of the nature of the chills and fever, so called, of our northern climate. The native Indian, or lower class of the mixed race, who are careless as to their habits of life, both in eating and drinking, and in exposure to the night air, are those who most readily succumb to the disease; but the foreigner rarely becomes a victim to the *calientura.*

PORTS AND MEANS OF COMMUNICATION.

San José, Champerico, and Ocos are the ports of Guatemala on its Pacific coast. The Pacific Mail line of steamers, connecting, by way of the Isthmus of Panama, with its own line on the Atlantic Ocean from New York, touch at these ports, carrying mails and passengers, with large amounts of freight, on the route to and from San Francisco and the city of Panama. There is also a line of German steamers which engage in competition with the Pacific Mail in the carrying of freight, but which do not run on any published time schedule, and consequently are not depended upon in the passenger traffic. There are, moreover, a number of so-called "tramps," both of steam and sail, which put in a desultory appearance at these ports. The Pacific Mail is, however, exact and regular in its service, long and well established, and naturally engrosses the bulk of passengers and freight in the carrying trade of this portion of the Pacific Ocean.

From San José and Champerico there are two lines of railways, one running from the first-named port by ascending grade to the capital of the Republic — the city of Guatemala — a distance of 72 miles by its irregular course; and the other from Champerico to Retalhulen, a distance of 28 miles.

The Republic is conveniently supplied with good mountain roads, in some cases suitable for wheeled vehicles, and in others for the animal trail alone. Between all principal points of thoroughfare, and where the exigencies of trade demand, the cart-roads are good, and kept in excellent condition. Most of the distance across the Republic from east to west, that is to say, from the Atlantic to the Pacific, must be traveled on the saddle, as the roads, following the irregular courses of mountain passage, are simply trails, narrow, and in some cases precipitous.

Livingston, Santo Tomás, and Puerto Barrios are ports of the Atlantic coast of this Republic. To the first named there is a regular line of mail and passenger steamers running from New Orleans, while a variety and number of vessels from the other side of the Atlantic touch there, as well as a line of freight steamers from the city of New York. Coasters are also engaged running up and down, in the fruit trade chiefly, which touch at the ports named, as well as the republics south, and extend their traffic in many cases to South American ports. A project for the construction of a grand railway to span this Republic from east to west has been on two occasions attempted, but as yet failed to be carried out.

The mail facilities and conduct of them in Guatemala are worthy of notice and commendation. In this respect they stand on a par with the greatest nations, affording reliable and safe means of communication with all parts of the world. And this is equally true of the interior telegraph and postal system, which carries messages and the mails promptly and efficiently to all portions of the Republic.

STAGES AND ROUTE SCENERY.

Means for individual transportation other than the railways mentioned are confined to the regular lines of "diligencias," or stages, which ply between the City of Guatemala and Antigua, a five-hours' journey, and Quezaltenango, the second city of size and importance in the Republic, occupying three days and two nights of rest on the road in the transit. The first named pass only through the Indian pueblo of Mixco, resting on the route at the way-side inn of San Rafael for refreshments on their journey to Antigua. The greater portion of the distance is a steady ascent of the mountain foot range of the volcano Agua until San Rafael is passed, when the road descends gradually until Antigua is reached, with a height 200 feet greater than the City of Guatemala, or an altitude of nearly 5,000 feet above the sea.

The road to Quezaltenango branches off from the one just mentioned near to San Rafael.

WATER-POWER.

This is abundantly supplied by the numerous streams and natural falls, which are to be found in almost all parts of the country. Various deep rivers water the departments of the Republic. Among others, the Michatoya, having its source in Lake Amatitlan, forming a grand fall of 300 feet near its rise. At the point of its confluence with the Maria Linda River it becomes navigable, so that the timber exported is floated on its surface to port. Another among the larger rivers is the Guacalate, also the Coyolate, which receives several tributaries in its course, and the Purulate, celebrated for the relief of nervous and rheumatic diseases. These are among the principal streams of the department of Escuintla which covers a space of 1,900 square miles in area.

On the northern side of the Republic, and emptying into the Atlantic Ocean, there are likewise a large number of water courses—the picturesque Dulce, and the Sarstoon, among the chief navigable rivers, and the Montagua, which is about being connected by canal with the coast. Indeed, there seems to be no portion of this Republic, on mountain, vale, or plain, where water-power may not be fully supplied for manufacturing or other desirable purposes. The Zápote, near the City of Guatemala, is utilized for giving dynamo power to light the streets and some of the residences of that city by means of electricity. Flour mills at Antigua and Quezaltenango, and saw-mills near Palin, are also run by water-power, while the machinery employed upon sugar and coffee estates is kept in motion by the same useful agent to supplement the labor of man.

SOIL.

The soil of Guatemala is generally fertile and of great variety in its chemical constituents; much of it is of decomposed lava, besides loamy, alluvial, and vegetable decomposition. It is capable of a high state of cultivation, a large portion of it being at present uncultivated.

PRODUCTS OF SOIL.

The agricultural, mineral, and arboriferous resources are exceedingly varied and numerous. The vegetables and fruits of the northern zone flourish literally by the side of those which belong to the torrid zone. Thus it is not unusual to observe the apple and peach tree bearing its fruit in close proximity to the orange and lemon.

COFFEE AND SUGAR.

These are the great staple products, the former being the chief, and for which both soil and climate seem to be most favorably adapted.

On both of these staples I have furnished the Department with full reports, and shall, therefore, pass them with mere mention. I may, however, remark, in connection with coffee culture, and in general answer to numerous inquiries, that it is a matter of time and money for a favorable pecuniary

result. One must be prepared for a capital outlay proportioned to the expected extent of cultivation of the coffe tree in order to purchase land, machinery, and incidental fixtures of the proposed established *finca* or *cafetal*, and patiently wait three years for the maiden crop, which will barely pay expenses, meantime devoting one's self to the laborious operation of nursery planting, holing, transplanting, and pruning; fighting, it may be, the hordes of grasshoppers, which, in places, seem to have an especial predilection for the tender shoots, and which frequently consume them. Once successfully established, however, the gains are very large, and worth all the anxiety and labor employed.

TIMBER.

The timber of Guatemala is abundant. There are forests of mahogany and pine, with a great variety of other woods which are capable of being used for manufacturing purposes. The balsam tree grows wild. There are forests of the India rubber tree, besides the textile plants, such as the maguey (*agave Americana*), the saltwort, the soft rush (*carludovica palmata*), the soft aloe (*furcroya gigantea*), all capable of becoming the bases for remunerative industry.

Resins, gums, and balsams are met with, such as the liquid amber, the copal tree, the turpentine fir, vegetable wax (*myrica cerifera*), vegetable soap-tree (*myristica sebifera*), the sarsaparilla root, quinine bark, vanilla beans, cocoa (the finest, it is said, in the world), the Chiapas pimento tree, the tamarind, and a great many other valuable trees indigenuous to this soil, but the names of which I am unprepared to supply.

RUBBER AND MAHOGANY.

With regard to these I shall refer particularly to the northern coast, where they are articles of more extensive shipment. The exports of rubber for the past year were 35,203 pounds, an increase of more than 5,000 pounds over that of the previous year. This useful article has been hitherto badly handled by a bleeding process of the trees which threatens to measurably exhaust them. The attention of the authorities, however, has been called to this maltreatment, and they are taking active steps to prevent its continuance. The rubber tree grows well on good soil, and might be planted with reasonable expectation of a favorable pecuniary return, but as from fifteen to twenty years are required to obtain a profitable result, it does not hold out such inducements for enterprise as the agriculturist demands, unless in connection with banana plantations. When the tree bearing that fruit is exhausted it may come into its place.

In the case of mahogany, this valuable timber exists in large quantities. Thus far the cutting has been confined to the banks of the streams, where advantage could be taken of floods to float the logs and raft them to port for shipment. Only a small quantity of this timber goes to the United States. The great difference in rules of measurement (8 per cent. against

about 30 per cent. reduction on gross measurement) gives preference to the markets of Europe. The prices of merchantable lumber in this market are as follows: Pine at the mills is sold at 4½ cents per foot; cedar, 5½ cents; mahogany, 6½ cents. Oak is sold by the piece, of various dimensions. It is hewn by the Indians with their *machates* and brought to market on their backs. The sizes are usually from 3 to 5 feet in length and 2 to 4 inches in thickness. There is no fixed price, but a piece of oak 4 feet long, 2 inches thick, and 4 or 5 inches wide costs about 62½ cents. The measurements given are Spanish, on the basis of the *vara* (2 feet 9 inches to the yard), and the price in Guatemalan currency, which is about 70 cents on the dollar in United States gold.

SARSAPARILLA.

Pursuing the movements and culture of those products which find shipment from the Atlantic coast, of which the town of Livingston is the port, I desire to mention sarsaparilla.

The exports of this article during the past year were 51,311 pounds. This product was in such demand at one time, and commanded such good prices, that the natives gave up almost every other kind of employment and devoted themselves entirely to its production. During the past two years, however, the price has fallen from 31 to 33 cents per pound to 16 to 18 cents per pound, and the demand has largely fallen off owing, probably, to a glutted market. It grows readily from cuttings of the indigenous vine, and, as the natural supply is giving out on account of careless digging of the root, it is possible that the cultivation of sarsaparilla could be made profitable, even at the present low prices.

BANANAS.

The banana crop is one which just now excites much care and attention on the Atlantic coast. The export of this fruit during 1887 was 117,514 bunches. Favorable decrees on the part of the Government, by which land can be readily purchased at a low price (say 30 to 35 cents per acre), have stimulated this industry, and it is believed that during the coming season the production will be quadrupled. A number of our fellow-citizens have settled in the section referred to, and either bought plantations already producing or are busied planting new ones. Livingston, on account of its ready communication with New Orleans, offers peculiar advantages for the banana trade. The rich alluvial lands lying along the Dulce and Sarstoon rivers and on the shores of Lake Yzabal are well adapted for this species of fruit culture.

The only line of steamers buying fruit at the port of Livingston until a few months ago was that of the Royal Mail Steam-ship Company, managed by Messrs. Macheca Brothers, of New Orleans, but lately Messrs. S. & J. Oteri, of the same place, have sent a steamer, thereby creating a healthy competition which, no doubt, will result favorably to those concerned in the fruit culture.

It is estimated that 250,000 banana plants have been set out during the past season. The profits from a well-managed banana plantation are variously estimated at from $75 to $100 per acre each year. Those most familiar with the business inform me that this estimate is not too high.

Bananas will come to perfection in their production in the course of twelve to sixteen months' time. The average cost per acre, up to time of production, is $25. The cost of transportation to steamer varies with the quantity produced and location of the plantation. The price paid at the port per bunch is 50 cents during seven months, and 37½ cents during five months in the year.

COCOA-NUTS.

Trees are being set out in the midst of the banana plantations, and it is reasonable to anticipate that there will be in a few years' time a large addition to the limited supply of cocoa-nuts which now find their way out of the country.

The cultivation of cocoa-nuts is considered a very profitable business, but more capital is required than is necessary for the outlay in the growing of bananas and other fruits. Cocoa-nuts are produced in from six to eight years, and a plantation eight or nine years old is computed to be worth $1 for each tree annually, which would be a yearly income of about $150 per acre. Owing to the long period which one would be obliged to wait for returns from this investment it would be better, doubtless, to cultivate the cocoa-nut tree in connection with bananas, as their sustenance does not require the same properties of soil, and they would begin to yield about the time of the natural exhaustion of the banana tree.

PINE-APPLES.

This luscious fruit grows most prolifically near the coasts, and some distance in the interior of the Republic. The pine-apples of the neighborhood of Escuintla and Retalhulen, as well as on the northern coast, adjacent to Livingston, are especially fine. No land seems too poor for their production. It is claimed that the fruit is too perishable for shipment, but the fact is, as I am reliably informed by a gentleman who has had personal experience in forwarding this fruit to Louisiana and Mississippi, it arises from careless packing. His own experience demonstrated that the fruit he shipped to the points named arrived in excellent condition. Pines, which sell readily in the United States at from 25 to 50 cents each, are reluctantly received on board of the steamers at Livingston at 62½ cents per dozen. It is believed that a canning establishment for pines at that port would not fail of success. A line of fast freight steamers between the United States and the Atlantic coast of this Republic would greatly stimulate the fruit industry and carry safely and in sound condition tropical products to northern ports. The export of pine-apples last year from Livingston was 91 dozen.

PEACHES, PEARS, AND APPLES.

These are abundantly grown in the higher altitudes of Guatemala. But they lack the quality and flavor of the same fruits of the north. They are remarkably good, however, for preserves.

AQUACATE.

Aquacate (the alligator pear) abounds, and is a popular table accompaniment as a vegetable, both in soup and as a salad.

ORANGES AND LEMONS.

Both the lime and the sweet lemon are indigenous to the soil, and are to be found in every portion of the country where fruit trees grow.

It may be generally stated that beets, pears, string-beans, cabbages, cauliflower, the black bean, and all kinds of garden vegetables are grown and supplied here. Potatoes, however, frequently fail under cultivation, and are often in limited supply as a consequence, commanding extravagant prices. Large quantities are, however, received from time to time, by shipment from California.

RICE.

Rice is a cereal which is cultivated on a limited scale for home consumption, and an article of diet very popularly used. In view of the results attending its cultivation on the Atlantic coast it is a matter of surprise that it has not become a product for exportation. A resident of Livingston produced last year, on the same land, two crops of 900 and 700 pounds, respectively, per acre. Considering the small cost of its cultivation, and machines for cleaning, one could reasonably anticipate an immense profit from rice culture.

CACAO.

Several plantations of this bean have been started in the department of Yzabal, but, although the trees thrive, the production has failed to prove remunerative. This is evidently from lack of knowledge as to the proper method of cultivating the bean. Its quality when grown is said to be superior to that in any other portion of the world.

CORN.

Corn is the cereal upon which the laboring classes mainly depend for their daily food. Crushed in the primitive fashion on a stone, mixed with water into a paste, flattened between the hands, and placed upon the charcoal fire, it forms the *tortilla*, which, with *frijoles* (black beans), constitutes the substantial meal for the Indian and most of the poorer ladino class.

This year the corn crop has suffered both from the grasshopper horde and the delay in the usual rainy season. A considerable quantity has been imported from California, and the price is extraordinarily high.

WHEAT.

Wheat is grown in the neighborhood of the City of Quezaltenango, and in small quantities at a few other points of high altitude. It makes, unmixed with foreign wheat, a dark colored flour. The production of this cereal is not sufficient for the demand of the market, and a large amount, in the shape of flour, is imported. There is, also, a considerable quantity of wheat imported, which is used to mix with the native product in the manufacture of flour.

BARLEY.

Barley is grown to some extent and used in the manufacture of the beer of the country.

TOBACCO.

There is no good reason why experts should not raise good tobacco in Guatemala. An American citizen with extensive experience in the growth, manufacture, and sale of tobacco showed to me a sample of leaf which he raised near the City of Guatemala, and for which he had been offered $40 per quintal. The seeds of the country are useless. The best are to be had from Ohio, Pennsylvania, Havana, but above and far beyond all the rest those of Sumatra. Turkish seed also gives a very good result.

Tobacco planting here requires a loamy, sandy soil. The average production of Pennsylvania and Ohio seed is 1,000 pounds to the acre, that of Havana and Sumatra between 400 and 500 pounds, and the Turkish between 200 and 300 pounds to the acre.

In Guatemala the seed is sown about the 24th of June. This, I am informed, is a great mistake, on account of the rainy season being due about that date. It should be sown early in the month of May, six months being required to perfect the leaf.

Tobacco raisers here are, as a rule, ignorant of the proper method of curing. They hang the leaf in the sun, which has the effect of prematurely drying it; and consequently of destroying its quality and virtue; afterwards they wet the leaf and put it into a press, and by so doing it is caused to "sweat" and become rank.

The department of Chiquimula produces the largest quantity of tobacco grown in Guatemala. Zacapa produces about six thousand plants, yielding 1,200 pounds. In Santa Rosa a good quality of tobacco is raised. Antigua also possesses the requisite quality of soil, but apparently lacks those who know how to utilize it in the respect mentioned. The very best quality of tobacco is grown in the immediate neighborhood of the city of Guatemala, because the climate is well adapted to it—the soil does not become too dry, and is free from frost.

There is no tobacco exported from this country. The importations from Central America amount to 800,000 pounds in leaf and scraps; from Cuba and Europe, 500,000 cigars and cigarettes. There is a tax of 6 cents per pound net weight on the tobacco grown in this Republic. Duties on im-

ported tobacco are 10 cents per pound net weight on scraps, and $1 per pound gross weight, including boxes, on cigars, cigarettes, snuff, smoking, and chewing tobacco.

The increase in the production of tobacco in Guatemala may be noted by the fact that the figures for the total production during the month of January, 1887, were $1,511.70, while those for the corresponding month in 1888 were $4,520.64, thus showing an increase of $3,008.94, or nearly 200 per cent.

MANUFACTURES.

The manufactories of Guatemala are exceedingly limited compared with the excellent facilities which are at hand for their development, and the need of their employment. As has been stated, water-power is abundant, and a spirit of enterprise, combined with the requisite amount of capital, is all that is lacking to create thriving industry by mechanical means, and to reap the substantial advantages of its activities.

There are but few factories in Guatemala worthy the name. In Quezaltenango and in Antigua there are a few flouring mills and one or two furniture factories of limited size. In the city of Guatemala there are manufactories, on a very small scale, for certain articles of merchandise, but all that is made for use and wear is done by hand, with the help of the now ubiquitous sewing-machine.

There are favorable inducements for the establishment of factories for glass and china-ware, paper, furniture, wagons, agricultural implements, cotton and woolen goods, all of which, and many other articles of general use, are now imported and command the most exorbitant prices for their purchase.

LABOR.

This is performed chiefly by Indians throughout the agricultural districts, and by the mixed race of Spanish and Indian, known as the ladino class, in the cities. Their rates of compensation vary according to the nature of their employment. To those working in the *cafetals* from 25 to 37½ cents per diem is paid. In the cities and towns the rate of wages for household servants is from $5 to $10 per month. Ordinary laborers receive from 37½ to 75 cents per diem, and day laborers on the railroads are paid $1 per diem. American carpenters receive from $4.50 to $5 per day; American machinists $5 to $6, and painters the same as carpenters. On this basis it may be easily calculated as to the remuneration of service for each branch of trade.

There is a distinct and peculiar class of laborers which corresponds very nearly to our express wagons in the northern cities. They are called *mozos*, and carry all kinds of burdens on their broad backs, assisted by a strap across the forehead, which is fastened by ropes to the load. These useful persons receive amounts from 6 to 12½ cents, according to distance, the weight of the burden apparently not entering into the calculation—neither its shape nor its size.

MINERAL RESOURCES.

There are evidences, both statistical and to a limited degree of present experimental knowledge, of gold and silver mines in this Republic. Many of these were worked in the olden time, but since abandoned, as it is said, for the want of capital. And yet it would seem to the inexpert mind in such matters that if the product was valuable it would soon produce its own required capital. They bear names, however, on the record, and I mention them for what they are worth. These are the Sastre, Agua Blanca, Laguna, Rincon, San Antonio, and Contreras, near the capital of Guatemala.

In the department of Huehuetenango there are several unworked gold, silver, iron, lead, and salt mines within its limits, with the exception of the Tojlon lead and San Mateo salt mines, which are being developed.

In the department of Quiché, in the Ilon Mountain, there is a gold mine; in Chinique, one of silver and several quarries of opal, marble, alabaster, and gypsum.

In the department of Yzabal, not far from the river Montagua, there are deposits or placers of gold that have yielded, by the primitive process of washing, quite an amount of the precious metal in flakes and dust; now, however, I am informed that Messrs. Potts & Knight, citizens of the United States, are making some improvements with the view of opening up some of the placers in which they are interested, in order to work them on a larger scale. The Friedman Mining Company, of New York, have sent to their properties a corps of competent miners with the purpose of renewing suspended operations upon Las Quebradas. The value of the gold-dust exported from Livingston last year was $12,000.

Coal exists also in the department of Yzabal. Various seams have been discovered, with indications that there are extended deposits of it. These coal mines start from San Felipe del Golfo, near the Yzabal lagoon, then pass beneath the Goelfete to the foot of the San Gil, extinct volcano, near Santo Tomás. It is said to be a rich bituminous coal, containing, when distilled, 50 per cent. of volatile matter, one-half of which is heavy carburetted hydrogen or illuminating gas.

TRADE.

The bulk of the trade of Guatemala is done with the European markets. This should not be so, and I regret to say that it is brought about by the carelessness and neglect of our dealers in the States. There are many enterprising American merchants wherever trade flourishes in this Republic, but they complain that they are forced to purchase their stocks of merchandise in Europe, because our own merchants are so careless in packing that a large amount of goods received come to them in a damaged condition. And they also complain that in canned goods it is too frequently the case that the article is either of inferior quality or so badly put up that it is spoiled. In shipping goods to Central American ports our merchants should show the same care that is exercised by their English and German competitors in packing and making secure the packages for safe transit.

There are certain lines of goods, especially in prints and drillings of American manufacture, which have grown into preference here; the natives will have no other. The same may be said of agricultural implements and certain kinds of cutlery goods. Base imitations, at low prices, from Germany are forced upon this market of a great variety of articles of merchandise. Trade-marks and designations are imitated by ingenious alterations intended to convey a false impression that they are the genuine American article. And these Brummagem wares seem to freely sell, but after a short time and trial it is discovered that their cheapness proves to be false economy, and the experiment of purchase is rarely repeated. A good article from the United States soon commends itself and commands the market, and there is no good reason why our people should not speedily reverse the present order of things and control the bulk of the trade of Guatemala if they will be but more careful in their method of procedure by sending forth the best of its kind, properly packed and secured for the roughest handling in its transportation.—GUATEMALA, *August 21, 1888.*

JAMES R. HOSMER,
Consul-General.

EGYPTIAN TRADE.

The net tonnage of Egyptian trade for 1887 was 644,859, and of this 589,533 tons were British, while only 55,236 tons belonged to other nations. As a rule freights ruled higher in 1887 than for many years previous, and ship-owners are reported to be very well satisfied with the results of the year. Freights on cotton to Liverpool were 12*s.* 6*d.* in 1887, while in 1886 and 1885 they were, respectively, 11*s.* 9*d.* and 10*s.* 9*d.* Grain averaged 4¼ per cent. in 1887, against 2⅞ per cent. in 1886 and 4 1/16 per cent. in 1885.

The quantity of produce shipped abroad in 1887 was comparatively encouraging, as may be seen from the following figures, showing the exports from January 1 to December 31:

Year.	Cotton.	Wheat.	Beans.	Barley.	Cotton seed.
	Bales.	*Ardebs.*	*Ardebs.*	*Ardebs.*	*Ardebs.*
1887	422,052	189,791	657,738	36,536	2,288,416
1886	417,100	79,867	610,597	286	2,284,003
1885	422,196	165,064	965,355	23,863	2,042,263

The total value of exports was, for 1887, £ E. 11,155,300, against £ E. 10,389,390 in 1886, and £ E. 11,717,918 in 1885.

The total imports for the corresponding years, respectively, were £ E. 8,345,695, £ E. 8,049,470, and £ E. 9,219,530, showing that while there is some increase in bales there is a decrease in purchasing capacity. Public demands necessitate popular economies, the struggle being one to meet increased taxation.

A broad classification of imports may be presented as follows:

Articles.	1887.	1886.
Textile goods	£ E. 2,579,200	£ E. 2,419,000
Groceries, drugs, etc	696,000	680,000
Spirits, wines, etc	647,673	666,000
Timber, coals, etc	869,000	869,000
Metals, machinery	985,000	561,000

Increase in 1887 in machinery and metals is due to the purchase of a lot of new rails and some locomotives and other material for the Egyptian railways, and of machinery and castings for the great irrigation undertaking at the Barrage, and for other irrigation works.

The import of coals for 1887 over 1886 aided in giving more vitality to the carrying trade. The relative quantities of coals imported during three years was as follows:

Year.	Alexandria.	Port Said.	Suez.	Total.
	Tons.	*Tons.*	*Tons.*	*Tons.*
1887	387,460	707,867	12,516	1,107,843
1886	341,045	603,415	5,697	950,157
1885	404,131	685,231	31,436	1,120,798

Examination of figures relating to trade with the Soudan illustrates a condition which has operated most adversely upon the commercial prosperity of Egypt. Enormous profits were made out of the trade to and from the Soudan, and were its channels opened again, which I think entirely possible under changed influences, there would again be marked changes in the aggrandizement of real Egyptian wealth and influence. Not only is a rich contribution to trade cut off by the absence in commerce of products of the Soudan, but consumption of foreign articles is vastly diminished. But the condition is best illustrated by figures. Here are the export values for ten years of the leading products of the Soudan:

Year.	Gum.	Ivory.	Ostrich feathers.
1878	£197,100	£28,305	£111,000
1879	228,156	7,945	102,705
1880	242,142	22,880	105,158
1881	259,597	804	67,265
1882	142,158	18,949	65,467
1883	123,724	132,574	71,810
1884	130,899	15,416	20,452
1885	99,102	321	3,844
1886	14,730	113	4,496
1887	10,744	974	3,146

I have heretofore given the imports and exports of specie for 1887. The Government figures, which I gave in a report sent with dispatch No. 229, are: Imports, £ E. 3,066,740; exports, £ E. 1,898,062. In making this report I have had recourse to figures kept in the counting-house of R. J. Moss & Co., owners of one of the greatest lines of steam-ships plying between Egypt and England, and their estimates place specie shipments as follows: Imports £ E. 3,145,374; exports, £ E. 1,946,730.

The Government figures regarding trade were also given in the preceding report, above referred to. They place imports for 1887 at £ E. 8,137,054 and exports at £ E. 10,876,417. Such differences are provoking when one is attempting to give the truth. But the difference is not so very great, and yet first-class statisticians should make them closer.

The course of trade to and from Egypt claims some attention in a report like this. Alexandria is, of course, the first commercial port, and having direct railway and river communication with the interior it will continue to control the bulk of foreign interchange until some other port has similar advantages. Port Said is the great coaling station for all the ships passing between the east and the west, and the steamers which bear coal to Port Said are there unable to find return cargoes. They, therefore, have to seek freight by touching at ports on the return voyage to Spain and to England. They would gladly take return cargoes at Port Said greatly below the rates charged from Alexandria, and the question is often mooted regarding the establishment of convenient channels of transportation from the interior to Port Said. The Egyptian Government owns and controls the railways, and, favoring Alexandria, as long as it has the power and influence, any move in favor of Port Said will not succeed.—CAIRO, EGYPT, *August 15, 1888.*

JOHN CARDWELL,
U. S. Agent and Consul-General.

NOTE.—"£ E." signifies Egyptian pound. £ E. 1 = $4.9641. An "ardeb" of wheat is a measure equal to about five-eighths of a quarter of 480 pounds. An ardeb of beans or maize equals about two-thirds of a quarter of 480 pounds. One thousand ardebs of cotton seed equal about 118 tons.

MANUFACTURE OF JEWELRY IN PFORZHEIM.

In Pforzheim, in the Grand Duchy of Baden, in 1887, there were 453 factories manufacturing articles of gold and silver. These employed 7,223 workmen. In 1886 there were only 442 factories, with 6,493 persons employed. This indicates an increase of 11 shops and 730 workmen. Besides the number of factories given above there were 241 other factories, with 1,042 workmen dependent immediately for their existence on the jewelry trade, such as die-sinking, plating, and rolling establishments. Of these, 1886 counted but 238, with 865 persons employed. In the immediate neighborhood, 12 establishments, with 106 employés, were running during the year.

WAGES.

The wages paid were the same as that paid in 1886, viz: Ordinary hands, 12.14 marks a week; good workmen, 15.25 marks; for the very best and most skillful, 25 to 50 marks; polishers and chain-makers got 9.14 marks. The

average pay for a week of 60 hours was: For men, 18 marks; for women, 10.50 marks; for male apprentices, 5.50 marks; for female apprentices, 4 marks.

The amount paid out as wages in the city and suburbs during 1887 was 4,000,000 marks. The amount of gold and silver used is set down at 3,500 kilograms of gold, at 2,800 marks per kilogram, and 10,000 kilograms of silver, at 133 marks per kilogram.

The business of the year was good, although every effort had to be made to keep up foreign trade against a sharp and pushing competition.

The wages paid here are marks, where our help of the same kind get dollars. I never saw a polisher work for less than $12 a week, and I have known them to get $18 and $20. Girls do the dirty work here and get 9 marks, or $2.10. A mark is 23.8 cents.

The polishing machines are much better than ours, not one-tenth so dirty nor so injurious to the health. The crocus dust is not allowed to escape into the air and then be drawn into the workman's lungs.—MANNHEIM, *August 18, 1888.*

J. C. MONAGHAN,
Consul.

THE PRODUCTION OF SALT IN BADEN.

A century since salt to the German poor was a luxury. At that time a pound of salt cost as much as a pound of meat or a large loaf of bread. The high price was due to the fact that the entire supply of salt for man and beast had to be imported. There were in Baden, at Bruchsal and Mosbach, previous to 1823, only two salt works in operation, producing 600,000 kilograms of cooking salt—a supply far below either demand or consumption. The exclusive right to sell salt was given or sold during periods of from four to six years. Parties getting this right were obliged, besides paying a rent to the State, to guarantee that the salt would be taken from French and Hessian salt works. At first, the Bruchsal salt-producer himself could sell in the villages of the Bishopric of Spire. Later, at the weekly markets, persons known as salt-sellers were tolerated to draw salt from the principal magazines and sell it by the pound "upon clean scales and fittingly dry." The high price of salt led to a great deal of smuggling and deception, especially along border territory, so much so that certain districts were put on allowances. In 1824 the right to sell was no longer rented; the Government in this year, by a decree, reserved for itself the exclusive right "to salt" the grand duchy. The "salting" (*besalzung*) of the grand duchy by the Government became possible by the opening of salt works at Pappenau and Dürrheim. Borings were made and salt found at 200 and 135 yards. A mathematician of Heidelberg University, Karl Christian von Langsdorff, was the first to urge upon the Governments of Würtemberg and Baden and neighboring States the wis-

dom of making borings for salt. His efforts were attended with complete success.* His first efforts in Baden were at Friedrichshall, near Jagstfeld, near the confines of Würtemberg. These proving successful, the Government commissioned him to make borings in the other end of the grand duchy, or Baden Oberland or Upperland. Here he was again successful.

While the cooking salt of Wieliczka and Boehina, in Galicia, is found in huge layers and is dug out in great blocks like stone, that of Baden is taken out dissolved in water, which, coming from the mountains, carries with it large quantities of salt. Each mine has six borings or wells. The pumps were once worked by wind-mills; now by steam and water power. The water is raised through brass pumps into large receiving-pans, wherein it is allowed to evaporate, leaving behind it a salt deposit, which is afterwards gathered and prepared for the market.

Not until the year 1868 did the State withdraw from the exclusive monopoly of the salt trade. Since that date freedom of sale of salt has been allowed. Each centner of home or foreign product of cooking salt must pay a duty of 6 marks per 100 pounds. Salts for cattle and uses in trade are free. In order, however, to prevent cattle salt being sold or used as cooking salt, it is denaturalized, *i. e.*, mixed with a stuff that renders it unfit for food, but not injurious to animals. Since free trade in salt became a reality, the Baden wells have not only maintained the field against all competitors but have now territory abroad. The two works employ two hundred and fifty hands at wages from 12 cents to 85 cents per day. They produce annually 400,000 centners of cooking and 200,000 centners of cattle salt. Of this amount 450,000 centners are used in Baden, the rest is exported. The income to the State from the salt tax is over 500,000 marks, or nearly $125,000.—MANNHEIM, *August 14, 1888.*

J. C. MONAGHAN,
Consul.

OPENING OF RAILWAY BETWEEN ROME AND SOLMONA.

An important branch line of railway, from Rome to Solmona, has just been opened to traffic. The new line runs easterly from Rome, chiefly through a mountainous country, across the provinces of Rome and Aquila, for a distance of 73¾ miles, to Solmona, a city of 18,000 inhabitants. At Solmona it connects with the line leading to Aquila, chief city of the Abruzzi district. At Solmona the new line also joins the Adriatic Coast Railway, thus opening railway communication between Rome and the Adriatic, in a direct line across the Kingdom, without the long and tedious détour to the north or to the south as heretofore.

*His name is forever linked with Baden's salt works and those of Würtemberg. He also published over fifty works on the subject of salt, its production and uses, and on mechanics, instruction in constructing and using machines; also, essays on the building of streets, bridges, and water-ways.

The new line has been built by the Government, with the aid of interested provinces and communes. It is Government property, but is worked by the Italian Adriatic Railway Company, to whom it is leased for a term of years. Total length of line from Rome to Solmona, 73¾ miles; total cost of construction, including bridges and tunnels, about $13,000,000.

The opening of this railway is considered an event of great importance in Italy, both from a commercial and strategical point of view. The products of the country traversed by the new line are chiefly agricultural, such as wine and olive-oil. There are some local manufactures, but they are so few and unimportant that special mention need not be made of them in this report.—ROME, *August 25, 1888.*

CHARLES M. WOOD,
Vice-Consul-General.

EXPORTATION OF HORSES FROM GHENT.

Attention is called to this subject in the report recently prepared by the commission on agriculture for the Province of Eastern Flanders. It is therein a matter of complaint that the annual fairs held during the last year (1887) have revealed but a scant supply of really desirable horses. To this verdict there is one exception, in favor of the town of Grammont, remarkable for the success of its stock, and whence, I may incidentally say, the exportation just mentioned took place.

Even at the present day, after repeated admixtures of Barb and other blood, the Flanders horse remains heavy and coarse-legged, but always powerful and enduring. Thus it is that Flemish cart-horse stallions (*reproducteurs de gros trait*) are in great demand, and it is calculated that since 1882 their exportation has more than doubled. Not only the United States, but also Brazil and the Argentine Republic, are heavy buyers of the more valuable breeders, while Germany and Austria secure large numbers in Europe.

It is feared by many intelligent Belgians that a continued exportation in this direction will, perhaps before long, cause a depreciated product, such as was witnessed in the case of the so-called Norfolk breed, the deterioration of which followed close upon the too-frequent purchases of America. It is not then to be wondered at if the commission on agriculture has come to the conclusion that uniform regulations applicable to the nine provinces should at once be elaborated, with a view to keeping the most valuable breeders at home. Just how this is to be accomplished the commission does not explain, since it rests on the one suggestion, that sufficiently large bounties be offered to individual owners. It may well be doubted if such a course could at all fairly produce the desired result—GHENT, *August 22, 1888.*

F. W. L. BUTTERFIELD,
Consul.

AMERICAN AGRICULTURAL IMPLEMENTS IN CANADA.

I find that plows of American manufacture are among the most prominent of the imports in this line. The Oliver chilled plow (made at South Bend, Ind., and the one, I am told, that has the largest sale in the United States), the Syracuse plow, and the South Bend plow seem to be most in demand and to have the largest sale. I have before me on my desk an offer from an Ontario dealer in the Oliver plows to sell same f. o. b. at his city in Canada for $10 each in quantities. The retail price here is $12, and numerous transactions take place at that figure. The same plows, I understand, are sold in quantities at the factory (not for export) at $14 each, and cost the American farmer at retail $16.

The Syracuse plow retails at $11 or $12 here, and, I am informed, sells for from $14 to $16 in the United States at retail, and the South Bend at $11 here, and $14 at home.

It is pleasing to observe how cheaply our manufacturers must be able to turn out these goods, from the fact that the Canadian duty on this class of goods is 35 per cent. ad valorem. Even admitting that the manufacturer makes no profit on his sales in Canada, these figures are of interest:

Price at which plow is sold in Canada		$10.00
Duty at 35 per cent. ad valorem and freight	$3.50	
Profit to Canadian dealer, probably	1.50	
		5.00
Leaving actual cost to manufacture plow		5.00
Retailed to American farmer at		16.00
Profit to manufacturer on all home sales, per plow		11.00

It would thus seem that the Canadian farmer has an advantage over his American neighbor in the purchase of necessary implements produced in his own country, and the latter before purchasing his plows might well figure as follows:

Price of plow at retail in United States		$16.00
Price of same in Canada	$12.00	
Freight to return same to United States (duty is free on American goods returned)	1.00	
		13.00
Profit to American farmer by purchasing American-made plow in Canada		3.00

Plows with tempered-steel mold-bands and beams, which sell in the United States for $17 and upwards, are manufactured in Canada (from Pittsburgh steel, on which duty has to be paid, and the wages of the workmen are substantially the same as in the United States), and are sold for $14 retail, thus showing excess of profit made by American manufacturer

over Canadian manufacturer of $3 on each plow. When it is considered that the Canadian manufacturer has to pay a duty on his materials and freight upon same to Canada from Pittsburgh, it will be readily seen at a glance that the excess of profits to the American over the Canadian manufacturer is much greater than the sum named, $3.

I am credibly advised by a very prominent Canadian farmer that he has just bought an American self-binding reaper (Walter A. Woods) for $110, laid down in an American city, near the lines, while the price of same machine in the same place to an American farmer would be from $150 to $170.

In addition to the larger implements mentioned, farmers' or agricultural hardware imported from the United States consists of light shelf goods, dry paints, and agricultural hand-tools, such as spades, shovels, forks, etc., on which articles the duty varies from 35 to 70 per cent., although the printed tariff reads only from 30 to 35 per cent. This Government has, however, instructed its customs officers to advance prices on invoices in certain lines which brings the duty up to a very high rate. On scythes, for instance, by means of a specific and ad valorem duty they have to pay from 60 to 70 per cent.

Notwithstanding these tremendous charges a careful comparison of the wholesale and retail prices of the above tools shows that in all cases American goods of this character can be bought in Canada as cheap, and, in many cases, cheaper than in the United States. It is conclusively proven by these facts that the American farmers are not receiving the full benefit of the low prices at which these goods can be produced in the United States.

These benefits are, apparently, reserved for the Canadians and other foreigners to whose markets we export goods. But existing conditions enable the American manufacturer to compel the purchase of his goods by the American farmer at exorbitant profits.

So great has been this discrimination by American manufacturers in favor of foreign purchasers that the Canadian customs authorities have come to regard with suspicion the prices on nearly all American invoices, as they can not understand why these goods should be sold to Canadians at such great reductions from the prices at which they are sold at home, at the point of manufacture. As a consequence they have during the past two years largely adopted the plan of appraising these goods for duty at the home figures in preference to the prices stated in the invoices. For instance, an American manufacturer may be willing to sell a certain article for $5 to the Canadian trade, the price for the same article at home being $8; the valuation is placed at the latter figure, and even though we sell for the former, the purchaser has to pay duty on $3 more than the goods cost him.

The result of this practice is that we are losing our export trade to this and other foreign countries—the falling off of the American export trade to this port on dutiable articles in one year having been $211,058.

The short-sightedness of our manufacturers in this respect, no less than the development of manufacturing in Canada, is closing this as it does other outside markets to our goods, and is driving us back to trade only within ourselves, to the injury of our great agricultural interests, to the reduction of the wages of our workingmen, and to the lessening of the products of our factories.—LONDON, ONTARIO, *September 15, 1888.*

WM. DE H. WASHINGTON,
Commercial Agent.

MESSAGE OF PRESIDENT DIAZ TO MEXICAN CONGRESS.

Messrs. Deputies: Messrs. Senators:

I feel high satisfaction upon meeting here the representatives of the people, now that the period of four years for which the public sense, expressed in the elections, placed me in charge of the executive is about to terminate.

Happily, throughout all the Mexican territory tranquility and good order reign, nor have they once been interrupted during the past four years; and, in consequence of the confidence which the situation inspires, all elements of prosperity at the command of the Republic are being developed.

Our foreign relations still sustain the characteristics of friendship and harmony which have marked them during recent times.

In view of the complications arising from the passage over the boundary line of cattle seeking pasture on either side, instructions were furnished to our minister at Washington to negotiate a treaty convention which should obviate the troubles incident to the stock raisers. The said convention was signed on July 11 last, and will now be submitted to the Senate for approval.

The officers who crossed over into American territory for the purpose of arresting a deserter, after due trial by the military court at Piedras Negras, have been sentenced to a requisite penalty.

The Congress of the United States has again taken up for consideration the matter of the fraudulent claims of Weil and La Abra. As the United States Senate some time since rejected the treaty concluded for the revision of those like claims, it is to be hoped that the houses of the American Congress will devise some means for preventing the final triumph of the fraud committed by the claimants.

During the close of last July the same Congress approved a bill authorizing the expenditure of $100,000 by an American commission, which, in connection with ours, should relocate the boundary line and replace the injured boundary monuments; but, considering the said sum insufficient, the Chief Executive of that nation has requested authorization for the expenditure of $200,000, which as yet is not known to be conceded.

The death sentence pronounced against Arvizu and Gutierrez, the promoters of the Nogales disorders, was commuted to twenty years' confinement. It was in their behalf that the President of the United States interposed his good offices, soliciting amelioration of their penalty.

Some Indians having escaped from the San Carlos Reservation, it is feared that they will commit depredations in our frontier states of Chihuahua and Sonora, and adequate measures are to be taken for the protection of those said states.

The governor of Arizona (in the United States) having had occasion to deliver over two American criminals, by way of extradition, to the governor of Sonora, the latter in turn delivered two Mexican criminals over to the former. The possible increase of leading crimes which have sprung up along the frontier at points where the two countries are in close contact, and where by a few steps a criminal may cross over into his own territory, and thus per-

haps save himself, and also occurrences like the one I have mentioned, constrain me to recommend anew to the Senate the suggestion made in my message of September, 1887, that it revise the extradition treaty with the United States, in accord with amendments approved long since by the American Senate, empowering, in a special manner and in extraordinary cases, the Presidents of each Republic to effect the extradition of their own co-citizens.

The Senate gave its approval to the treaty convention made with a special envoy from Guatemala for the adjustment, on an impartial basis, of the mutual claims of both countries; but it is now ascertained that the legislative assembly of said nation, upon revising the terms of the convention, has introduced substantial modifications, which it would be impossible to accept, especially if the prominent antecedents of that convention are taken into consideration, as well as the other international matters with which it stands related.

A treaty of commercial reciprocity with that country had also been framed, and had been submitted to the Senate; but, upon the request of the Guatemalan Government, it was agreed to waive for the present its ratification, in order to agree upon some method for making the treaty satisfactory to both nations.

Difficulties have arisen between the boundary commissions of Guatemala, in the survey of the boundary line, and the Department of Petén. These gave occasion to a note from the minister of foreign affairs of that Republic to our legation protesting against the operations of the Mexican engineers. Our department of foreign affairs is engaged in the study of the report thereon furnished by the department of public works, with the attention due thereto, in order to dictate whatever measure may be adjudged needful and just.

On the 10th of last July our minister at Washington signed with the representative of Ecuador, recently elected President of that sister Republic, a treaty of friendship, commerce, and navigation. The treaty I refer to will soon be submitted to the Senate for its approval.

Our consul-general at Paris, the engineer, Don Francisco Diaz Covarrubias, is to be present as Mexican delegate at the international geodetic assembly, to meet soon at Salzburg, and to which our Government was officially invited.

The executive has approved of the project of agreement and rules signed by our representative at the international conference in Brussels, which, as I have already informed Congress, was convened for the purpose of translating and publishing all customs codes and tariffs extant.

The Mexican Government has been invited in expressive terms by the Government of Spain to take immediate participation in the preparations commenced in that Kingdom for the celebration, in 1892, of the fourth centennial of the discovery of America. The friendly invitation having been accepted, our minister residing in Madrid has been appointed special representative on that occasion.

A treaty for the exchange of mail packages reciprocally, similar to the one recently negotiated and now in force with the United States, is about to be concluded with the minister of Her Britannic Majesty by the commissioner of the department of foreign affairs.

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The elections to fill the Federal appointments were conducted in the shadow of peace and quiet throughout the country. No question of politics nor of local character has, during the recess of the chambers, disturbed public order, and the harmony which subsists between the governments of the federation and of the states. This favorable condition of affairs has enabled all to devote attention to public improvements, to administrative matters, to the progress of education, and to impart to public safety that increasing stability which should and does so strongly co-operate in the elevation of the reputation of the Mexican nation. This important end is aided by the constant vigilance of the police of the several states, assisted by the rural guards, whose detachments, distributed in the Federal district and the territories, as well as throughout the states of Mexico, Hidalgo, Puebla, Tlaxcala, and Guerrero; also in Oaxaca, Guanajuato, Michoacán, and Querátaro, constantly pass over the highways, and are

stationed at convenient points; all of which tends to the prevention of crime and inspires confidence among the various companies and laboring classes. The organization of the rural corps and the rules set by some of their fixed garrisons are being bettered each day, and new improvements are now under consideration, due notice whereof will be given to Congress.

The condition of the district mounted guards has also been improved. Their personnel has been increased, and also the amounts designed to the payment of the same under the budget of expenditures. The nature of the service rendered by the mounted guards, who are obliged, even though living within the limits of the Federal district, to change their residence constantly, made it very difficult for them to attend to the education of their children. This difficulty has been set aside by the recent opening of a special school, in which the children of those guards receive not only instruction but clothing and food as well.

The inhabitants of the country are as much interested in the sanitary condition thereof as in its security. In this line the efforts of the local authorities are seconded by the Federal Executive, in the bettering of the sanitary conditions of all the territory of the Union to obviate thus an attack by epidemics. Fortunately, the diminishing of Asiatic cholera, alike in Italy and in Chili, during the past year, presages its disappearance soon from Europe and America. Fortunately, also, a long time has elapsed since any alarming epidemic has appeared in the Republic.

In the Federal district, where matters of public sanitation are more directly at the charge of the Executive of the Union, improvement is being constantly made on the prosecution of the drainage works, so important, and the prompt dispatch of which will be secured through a contract just made for the speedy termination of part of the labors. To these labors are added other partial works undertaken by the board of health and the city councils under the auspices and inspection of the political authorities and of the department therewith encharged.

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The postal service is improving as much as possible. Nothing can give a better idea of its progress than the following data touching its operations: The proceeds of the service during the fiscal year closing June 30 last, were in excess of the previous year $53,756; and the pleasing result was obtained, viz, that the income during that period, as was hoped, not only equaled that of 1883, the last year when the high postal tariff was in force, but even exceeded by $36,414 the net income of that year.

Naturally the cause for the increase in the proceeds was found in the increase of postal matter handled. While 24,000,000 pieces were handled in the fiscal year 1886–'87, the movement during the year closing in June last exceeded 29,000,000 pieces.

The item of foreign correspondence alone has assumed such increased proportions that it has become necessary to open new departments in order to reinforce the number of employés in various exchange offices in the Federal district, as well as on the northern frontier. Evidently the great reduction of time in communication with the United States and Europe, which is to be soon furnished us by the National Railroad, will make this progress even more palpable.

Throughout the whole country greater activity is observable in matters of communication. Places that were scarcely known by name, to-day enjoy mail facilities which place them in possession of culture by means of the transmission of books and papers, co-operating, as they do, likewise to the development of social intercourse and to the interchange of business transactions. To obtain this result it was necessary to open new offices, which included thirty local post-offices and fifty-eight agencies. To utilize the same new postal routes had to be opened up and the number of weekly trips increased.

The late treaty made with the United States for the exchange of parcels through the mails took effect on the 1st of August last. Notwithstanding the short time that this important service has been in operation, the number of parcels exchanged has been very large, and it is to be hoped that the packages sent from Mexico will steadily increase in number as our few national industries and our many natural products become better known abroad.

For the continuation of the service carried on between San Francisco, Cal., and some Pacific ports of Mexico by the steamer *Newbern*, and in order to connect the said service with that rendered by the steamer *Alexander*, a contract has been entered into with the concessionaire of this latter line for the establishment of a steamer service, which, under the Mexican flag, shall ply between the principal ports of the two lines mentioned.

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The national *monte de piedad* (pawn-office) has struggled with the difficulties consequent upon the crisis through which it passed four years since, and now can, due to the efforts made in its behalf, continue its operations and strengthen its credit. The Executive insists upon the new combinations suggested in his preceding message, and hopes to see the same soon realized, certain that they will greatly aid in the usefulness of the establishment.

In accordance with the authorization given by Congress for the total or partial modification of the code of commerce, the Executive hastened to issue the law on anonymous firms for the purpose of thus fomenting the creation of like institutions which have such decided influence upon the development of the industrial and mercantile interests of the country. The commission appointed to study the general plan of amendments to the said code is concluding its interesting labors and will soon issue the new code of commerce.

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No effort has been spared tending to foster and propagate public education as the most efficient method of assuring in future the practice of democratic institutions and peace and prosperity throughout the Republic. In this connection various measures have been inaugurated by the department of justice and public instruction for the opening of primary schools in the northern district of Lower California, which, because of its geographical position, and on account of its natural elements, claims the especial attention of the Government. Some notable improvements have been introduced in the normal school of teachers suggested by the late trip made to the United States by the director. The demands of modern scholarship have been gradually met in the other national schools, and, in order to stimulate private enterprise in the interest of education, due assistance has been tendered to a night school for working girls.

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The progress made in the principal departments dependent upon the department of public works since my last message has been indeed noteworthy. With regard to railroads, despite the fact that rains have been copious in the greater part of the country, it can be stated that works of survey and construction have been begun on some lines, while on others such work has continued with little or no interruption.

On the 21st of last May the Central Railroad Company opened up to traffic the important line from Irapuato to Guadalajara, 259 kilometers in length. On the Tampico-San Luis branch the iron has reached kilometer No. 188, on the bank of the Gallinas River, over which it is proposed to throw a bridge for the tracks. The road-bed of the same has been prepared as far as kilometer 232. On the line from Aguascalientes to San Luis Potosi, the locomotive, on the 9th instant, arrived at Salinas del Peñon, some 110 kilometers from Aguascalientes, and about half the distance from San Luis Potosi.

The Mexican National Company has worked with great activity to complete the branch from Saltillo to San Miguel de Allende, in length 565 kilometers. At the close of this month the northern line reached the city of San Luis, while the road is to be connected soon at the Boquillas viaduct, for it is to be opened for traffic in November. The conclusion of this great line, which unites cities of importance, will give a third road of steel to link the City of Mexico with the frontier of the United States.

The Hidalgo Railroad Company has finished 5 kilometers on the line from Tepa to Tulancingo, as well as 30 to unite San Agustin and Teoloyucan, thus making another line to connect Pachuca with this capital, as well as with the Central and National railroads.

Regarding the Interoceanic Railroad Company, formed by the fusion of various companies, it can be said that 20 kilometers have been terminated on the road from Yautepec to Amacusac and 30 more on the section between Mazapa and San Martin Texmelucan. It is to be presumed that by the aid of the financial combinations recently effected in London this railroad will give great impulse to their labors.

The companies in Yucatan are likewise engaged in construction. The Mérida-Calkini branch has delivered 6 kilometers and the Mérida-Valladolid 7.

The total extent of railroads in the Republic reaches now 7,500 kilometers.

The telegraph system has been gradually enlarged by the construction of new lines, which have connected important towns of various states and various frontier points, while the system of general ways of communication has always been followed. Without stopping to particularize the details of progress as obtaining along those lines, and many of which details have been perfected, it is sufficient to state that the total extent of wires strung since last April up to date reaches 950 kilometers. Aside from construction work on the aforesaid lines, repairs and improvements have been made on the 18,000 kilometers which comprise the Federal telegraph system. The good condition of the system is well known, for communication by wire has been constantly maintained in the country despite the accidents caused by the abundant rains of last June, during which time, and even while the most severe damage befel the Bajéo district, the Federal telegraph system alone remained unhurt, and rendered, during those times of calamity, marked services to the authorities and to the public.

Work on the Vera Cruz harbor has kept up incessantly. The construction company having received the blocks of *chalán parta* has sunk a great number of them along the entire length of the northeast breakwater. It is to be believed that by the activity displayed in the work and the experience therein attained that each day better results will be obtained in the work and more progress made, so that very shortly, and within the contract term, the work will be concluded.

The towns of Matamoros and Paso del Norte were seriously threatened by the waters of the Rio Bravo, which, year by year, destroyed the banks on which they are located. In order to remedy the evil the Government undertook, in their immediate vicinity, some works of defense. While the works are not concluded, they are beginning to give the best of results. At Matamoros five wing-dams of a total length of 646 meters have been constructed. The works defend the northeastern part of the city, as well as some 800 meters of the river bank, a portion of land which lay within the threatened tract, being almost below the level of the high water. Four wing-dams have been finished at Paso del Norte, and the fifth is well under way.

Mining matters are being fully developed. While from April to date there have been only four hundred and twenty-five denouncements of mines and eight denouncements of reduction works, a lower record than hitherto, it should be noted that during the same period six hundred and eighty-two mines and thirty-three reduction works have been brought into operation. On the other hand, the good effects which the law of June 6 last are producing may have operated to diminish the denouncement of mines, while they increased the number of contracts made with the Executive for the development of the mineral zones in accordance with the law cited; during this time fifty-seven contracts were made and others are pending. Including the contracts already concluded since the promulgation of the said law, it is assured that capital, at least to the extent of $30,000,000, has been invested in mining industries. The recent development of that industry has resulted in the creation of new mining deputations. Seven such deputations have been established lately at points where the necessity for same is plainly evident.

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The general bureau of statistics, formed under the law of May 26, 1882, has collected up to date some important data to compile the respective charts, which are now being included

among the publications of the department. Prominent among these statistics are those on the criminal classes, embracing a period from 1871 to 1885, which gives satisfactory indications of the decrease, noteworthy and gradual, of crime in this our country.

The work of reorganization in the public treasury is continued; but, like every administrative reform of importance, it requires the lapse of time to reach a satisfactory conclusion. Yet it can be said that while the financial situation is not altogether prosperous, there are good grounds for belief that it will improve, for now the Republic shows in extraordinary degree a development of the elements of public wealth.

Owing to the increase in national revenue the treasury has been enabled to comply easily with the obligations provided for in the estimates of expenditures. This is due to increase in value of property, to the development of commerce, and to the increased exportation of Mexican products, as well as to the favorable condition of our credit, which was never quoted higher than the present time.

Construction on the new custom-house at Santiago Tlaltelolco being terminated, the dispatching of freight coming to this capital on the railroads has been concentrated there, to the benefit of commerce and of the fiscal interests, and it became necessary to reorganize the service of the custom-house in order to meet the new exigencies thereof.

The stamp revenue had been hitherto collected through the payment of commissions of so much per cent. on the amounts collected; but as the executive was desirous of introducing greater economy in the collection, he decreed a new tariff of rates of commission, which has taken effect in this present fiscal year. Experience will demonstrate whether the commissions allotted are fair recompense for the labor and responsibilities of the functionaries of this service and adequate to the public service.

Business circles and the poorer classes alike met with serious difficulties in the simultaneous circulation of coins of the decimal and the old systems. The Government could not remain indifferent to these evils, and it therefore made a contract with the Mexican National Bank for the redemption of the old coinage to be all called in, in order that the coinage current should be issued according to the decimal system, and that within the term fixed by Congress in its law of June 4 last, the legal circulation of money of the old coin should cease. This contract is being complied with throughout all the Republic.

In virtue of the law of the 30th of last June, two of the banks provided for by legislation in Chihuahua were established, a contract to that effect having been made with the respective companies. The arrangement made limited the issue and circulation of bank-notes, while the interests of the public are guaranteed by the opening of a reserve fund and by the appointment of a functionary who, in the name of the Government, may inspect the operations of those banks. Thus they were brought into subjection to our banking laws.

The department has made a contract whereby the Mortgage Bank will widen the sphere of its action, increasing its capital stock in order to devote itself to new operations designed to develop wealth. Institutions of credit being one of the most efficient methods of attaining such favorable results, the Government will engage to aid this movement, provided there is no conflict with the laws or with arrangements effected with other companies.

The operations of the liquidation and conversion of the interior debt continue to develop regularly. With reference to the foreign debt, the Government is complying with the contract of the loan made in Berlin on March 24 last, whereby the old London debt is being converted at 40 per cent. into the new consolidated 6 per cents. The loaning firm has taken advantage of the right of option which it had reserved for £2,100,000 sterling. This sum, added to the cash payment made, shows that the loan is realized in almost two-thirds of its value. There are good grounds for believing that very shortly the contract will be wholly complied with as decreed by Congress on May 29 of the current year.

During the last fiscal year the exportation of national products reached the sum of $48,745,560. A comparison thereof with the exports of the preceding year shows that while there was a decrease in the exportation of coin and precious metals amounting to $2,260,512

there was an approximate increase in other articles, all of which, taking into account the depreciation of silver, is advantageous to the country, which has paid with merchandise a greater proportion of its imports than during the preceding year.

The revenue is increasing. During the last fiscal year, closing June 30, the cash collections aggregated $32,508,564. It has been practicable, therefore, to meet punctually the several branches of public service, as well as to pay off the cost of public improvements and other pecuniary obligations resting upon the treasury.

The floating debt, with interest, has been redeemed, the treasury liquidating and settling the respective accounts. Also the pending accounts with the national bank have been settled up to June 30 last, while a new contract for the account current, to be opened in conformity with the charter franchise, has been made with the said institution.

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The status of the public consolidated debt up to June 30 was as follows:

Bonds issued of the interior debt	$16,052,000
Bonds issued of the foreign debt	22,252,250

In virtue of the loan of the bonds of the issues of 1851 and 1886, £4,462,500 sterling have been converted at 40 per cent. When realized the foreign debt will drop to the figure, in gold, of $52,500,000.

Meanwhile payment is being strictly made of the interest, alike on the bonds of the interior debt and the foreign debt, as well as upon the loan bonds. The amount to meet the coupon on the latter, falling due in October, is already placed in London through the National Bank.

The bonds of the interior debt are quoted in Mexico at 33 per cent., and certificates (held by employés for arrearages of salary) without interest at 35 per cent.

The old bonds of 1851, which have not as yet been converted, are quoted in London at 38 per cent., while those of the new loan negotiated at Berlin are at 92½ per cent., thus evidencing that our credit has reached a point never touched since the days of independence.

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September 16, 1888.

TURKEY'S LAW ON EXCAVATIONS.

[Transmitted by Minister Straus.]

CHAPTER I.

ARTICLE 1. The remains left by the ancient populations of the states forming at present the dominions of the Ottoman Empire, that is to say, the gold and silver and other ancient coins, and the inscriptions conveying reference to history, and statues, and sepulchers, and ornamental objects in clay, stone, and other materials, utensils, arms, tools, statuettes, ring-stones, temples, palaces, circuses, theaters, fortifications, bridges, aqueducts, bodies and objects in tombs, burying mounds, mausoleums, and columns, are regarded as antiquities.

ART. 2. In general the right of ownership of all the antiquities is regulated by the present law.

ART. 3. All the antiquities discovered in the Ottoman territory, be it on the surface, underground, or exhumed, picked up in the sea, the lakes, the rivers, the streams, or the valleys, are the property of the Government.

ART. 4. The monuments of antiquity which happen to be in the property or houses of private persons, either loose or built in the walls, can not be moved by the proprietors of the property, and for the keeping of those antiquities in their original place the Government has inaugurated the following measures.

ART. 5. It is forbidden to destroy the antiquities which may be discovered in one's land, like buildings, roads, walls of castles and fortresses, baths, tombs, and other things, and in order not to occasion any damage to antiquities, they will refrain from establishing any lime-

kiln at a distance less than half a kilometer from the spot where the antiquities are to be found; or from the erection of any kind of building and works which would be injurious; or to remove the stones of tumbled down ancient monuments; from measuring or taking molds; or of placing ladders on them for any purpose whatever; from appropriating or restoring old buildings and making use of them in part or in all; or to use them for deposits of grain, straw, or hay, or to use them as tanks, or for cattle, or turn them into fountains, or to use them for other purposes.

ART. 6. The places on which the Government has decided to make excavations may be bought from their owners, if they are in the hands of private persons or societies; if they refuse to sell, the regulation on expropriation for public uses shall be applied in order to buy that property.

ART. 7. No one is allowed to make excavations, to extract or appropriate antiquities in the Ottoman dominions, without having previously obtained the official permit in accordance with the present regulation.

ART. 8. The exportation of antiquities found within Ottoman territory is absolutely forbidden.

ART. 9. The permit for the excavation and exhumation of antiquities may be granted to private persons or to any scientific society. The terms of that permit must be in accordance with the conditions of the present regulation.

ART. 10. As to the searches and excavations of antiquities, after the opinion of the administration of the Imperial Museum and the conclusions of the council of public instruction have submitted the case to the Sublime Porte, the final permit will be granted in accordance with the terms contained in the third chapter of the present regulation.

ART. 11. A duplicate list describing the quantity and the quality of the objects excavated must be made on the printed blanks to be furnished by the ministry of public instruction, which must be signed and certified, then one of the copies will remain with the excavator and the other with the board of public instruction; where such boards do not exist, they will be recorded in the books kept for the purpose by the local authorities and sent to the ministry of public instruction.

ART. 12. The antiquities excavated with an official permit belong to the Imperial Museum, and the excavators have only the right to take drawings or molds.

ART. 13. The antiquities discovered without permit are confiscated, and if the excavator has already disposed of them he will pay their value.

ART. 14. The antiquities which may be discovered by accident in digging the foundations of a building, or of a wall, or of a sewer shall be divided in equal parts between the owner of of the property and the Government, and then at the division of those antiquities, as the Government has the choice of taking such as it thinks proper on paying their value, it may get from the land owner out of those which have fallen to his share such a portion as it wants.

CHAPTER II.

ART. 15. Those who desire to undertake excavations of antiquities shall prepare a topographical plan showing the boundaries of the spot to be excavated and present it at Constantinople to the ministry of public instruction, and if they are in the provinces, to the governors-general with their written request, and the governors-general will forward it, together with their report of their investigation of the subject, to the ministry of public instruction.

ART. 16. The delivery of the permit of excavation appertains to the ministry of public instruction after agreement with the direction of the Imperial Museum, but unless the necessary investigations are made, and, according to Article 10, the consent of the Sublime Porte is obtained, this permit can not be given.

ART. 17. The permit for excavating antiquities can only be granted under the following conditions:

(1) After having ascertained that it will cause no obstruction to the forts, fortifications, public buildings, nor interfere with the public utility.

(2) If the excavations are to take place in the landed property of a private person to satisfy the owner.

(3) The pecuniary security, which will be agreed upon by the director of the Imperial Museum, must be actually deposited.

After the fulfillment of these conditions the ministry of public instruction, after having conformed to the prescriptions of the preceding article, delivers the permit. But no permit can be granted for more than two years. And if, before beginning the excavations, or even after having begun them, for some reason the period of the permit is allowed to pass, and the explorer wants to continue his researches, if there is no objection, the ministry of public instruction, after an agreement with the director of the Museum, may grant a permit for an additional period, not longer than one year.

ART. 18. The ministry of public instruction will collect, on the permits of excavation, on account of the Museum: On a permit from one day to six months, 5 piasters; on a permit from six months to one year, 10 piasters; on a permit from one to two years, 20 piasters.

ART. 19. If, after having obtained the permit, the excavations are not commenced within the period of three months from its date, or after having commenced them they should be discontinued for two months, the permit will be annulled; and if the explorer wants to renew it, the ministry of public instruction, with the director of the Museum, may continue or not the old permit, or cancel it and furnish a new one in its place.

ART. 20. The permit for excavations shall not embrace a larger area than ten square kilometers. If, after the commencement of the excavations, an objection is found on the part of the Government, on the order of the ministry of public instruction the works shall be temporarily stopped, and the time of stoppage shall not be accounted for in the period of the permit, and the explorers will have no claim for expenses or damages on account of that stoppage.

ART. 21. At the places where excavations are to be made the Government will keep an able and capable official, and the traveling expenses and salary of this official, after having been fixed by the authorities, will be collected from the excavators in full and paid to him monthly by the treasurer of public instruction. If the excavations are finished before the expiration of the permit and the researches abandoned, the surplus of the money paid for the salary of the official shall be returned to the excavator.

ART. 22. No permit of excavation shall be granted to officials of the Ottoman or of a foreign government for excavations to be made within the district of their official post.

ART. 23. The transfer by the recipient of a permit of excavation is forbidden.

ART. 24. A person can not have permits for excavations in more than one place.

ART. 25. Those who by accident discover antiquities are bound, if at Constantinople, to inform the ministry of public instruction within five days; and if in the provinces, to inform the local authorities within ten days.

ART. 26. At the expiration of the permit, or at the termination of the excavations, when the excavator gives notice of it, if it is found that he has fulfilled all the conditions of the regulations, the money he had deposited as security will be returned to him in accordance with the receipt.

ART. 27. The amount produced by seizures of antiquities or, on condemnation, from sales at public auction in accordance with the rule by an official auctioneer, and the money accruing from divisions with the owners of antiquities, and also fines and fees of permits, and the product of confiscations, shall belong to the treasury of the Museum.

CHAPTER III.

ART. 28. The importation from abroad of any kind of antiquities is free and exempt from custom dues, and any kind of antiquities which are to be transported from one district to another within the Ottoman dominions are exempt from internal duties.

ART. 29. Permission for the re-exportation of antiquities introduced from abroad into the Ottoman dominions, and for the transportation from one district of the Empire to another of antiquities found within the Empire can be obtained by means of drawing up a list of said

antiquities by the owner and shipper and transmitting it to the director of the Museum through the ministry of public instruction, and in the provinces to the boards or commissioners of public instruction, and in localities where there are no such boards or commissions to the local authorities. The owner of antiquities introduced into the Empire from abroad is bound, within eight days, to transmit a list of them, as before stated, to the administration of the Museum through the ministry of public instruction, and in the provinces to the board or commission of public instruction, and if there is no such board or commission to the local authorities.

ART. 30. In any case the re-exportation of antiquities imported from abroad, and the transportation from one district of the Empire to another of antiquities found within the Empire, is necessarily subject to an official authorization, which can be procured from the ministry of public instruction with the agreement of the director of the Museum.

ART. 31. The antiquities exported without the special permit of the ministry of public instruction shall, if captured, be seized or confiscated in the name of the Museum.

ART. 32. The granting of the official permission to export antiquities into foreign countries, though reserved to the ministry of public instruction, with the consent of the director of the Museum, is subject to the following conditions:

(1) The Museum should possess already a duplicate of the kind.

(2) That it should be established that the said antiquities have been imported from a foreign country.

CHAPTER IV.—PENAL PROVISIONS.

ART. 33. Those who appropriate antiquities found on the ground or exhumed on private or Government property, will be liable, in accordance with article 138 of the penal code, to damages and a fine, and to imprisonment from one month to one year.

ART. 34. If those who have accidentally discovered some antiquities do not give notice of it they, after being deprived of the share to which they had a right, are punished with a fine equal to one-fourth of the value of their discovery; and if those antiquities are out of reach, besides the fine, they will have to pay their total value.

ART. 35. Those who, in transporting from one district to another antiquities found within the Empire, violate article 32 will be submitted to a fine from 1 to 5 Turkish pounds.

ART. 36. The lawsuits which may originate out of the regulations shall be heard in the ordinary courts of law.

ART. 37. The ministry of public instruction is charged with the enforcement of the present regulations.—The 23d of Rebbi-ul-Akhir, 1301, and 9th of February, 1299: (*i. e.*, February 21, A. D. 1884.)

CULTIVATION AND PREPARATION OF PRUNES IN FRANCE.

According to Theophrastus, the prune was cultivated in Asia Minor in most remote ages. Pliny speaks of its cultivation by the Romans, and makes mention of eleven varieties proceeding from the domestic prune introduced into Italy by Caton the ancient. It grew without cultivation in the environs of Damascus, and a very rustic and vigorous variety, known as the black Damascus, is much used by nurserymen as subject for grafting all other varieties. Its introduction into France is attributed to the Crusaders. If tradition is exact, this valuable fruit was first cultivated in the southwest of France by the inmates of a convent near Clairac. In traveling from Aiguillon to Fumel, through the productive valley of the Lot, one sees fertile plains bordering the picturesque river sides, covered with plum trees, which furnish the famous prunes d'Ente and Robe-Sergent, which are exported to the remotest corner of the commercial world. This valuable tree, which

loves a temperate climate, does not confine itself to this special section of France, but is profitably cultivated wherever climatic and soil conditions are favorable to its growth, as is demonstrated by its extensive cultivation in the valley of the Loire, the departments of the Garonne, Dordogne, Tarn, and Aveyron. The well-known brand, called Tours' prunes, come from the orchards of the Loire. Lorraine produces a variety called Quetsche, one of the best prunes for ordinary preserves.

CULTIVATION OF THE TREE.

The prune tree thrives best in clayey calcareous soil, and does not exact for its roots a loam of profound depth. Land adapted to the culture of the vine is also partial to this tree. In many localities these two valuable products are cultivated in conjunction, as the broad leaf of the vine is especially useful in protecting the roots of the tree from the intense heat of summer. Land thus planted and valued at 2,500 francs the hectare (2½ acres), would be worth but 2,000 francs if planted in vines alone.

Arboriculturists recommend that to obtain successful production the prune tree should be grafted. This practice insures a faithful reproduction of the species guaranteed. The usual custom in this country in beginning or renewing an orchard is to buy the young trees from nurseries ready for transplanting, and immediately put them into the ground.

GATHERING AND PREPARATION.

When the prune is ripe it is covered with a sort of glaucous powder called flower, which greatly adds to its value as a table fruit. As the gathering is an important factor in the subsequent value of the prune, great care and good management are indispensable. The fruit is usually gathered after the heat of the day has dissipated the humidity of the night. When possible, straw is carefully spread beneath the trees to prevent the fruit coming in contact with the earth. The prevailing custom, however, is to harrow the ground before gathering the plums. Only such fruit as readily falls when the tree is slightly shaken is gathered. As soon as harvested the fruit is taken to a building, properly called the fruitery, where it remains for a few days to complete maturity. Prunes are subjected to not less than three, and frequently to four, distinct cookings before being pronounced ready for market. Each of these operations has a special end, in sight of which great care is demanded. The first two preliminary cookings have for object evaporation of water contained in the fruit, and preparation for the final cooking, which dries the fruit and imparts a certain brilliancy much sought after by buyers. Sun-dried prunes are most delicious in taste, but the exigencies of the trade do not permit of such long preparation. In several districts of France most primitive means are practiced in curing the fruit for market. In Provence the freshly gathered fruit is plunged into pots of boiling water, where it remains until the water again arrives at boiling point. It is then removed from the boilers, placed in baskets, and gently shaken until cool, when it is put upon long trays and exposed to the heat of the sun to com-

plete desiccation. At Digne the prunes are not gathered until completely matured. Women peel the fruit with their nails to avoid injury to the soft pulp. The fruit is strung upon small twigs, and in such fashion as not to touch. These sticks of prunes are stuck into straw frames, which are suspended in the sun until the prunes easily detach from the stick, the pit is then removed, the fruit placed upon trays, exposed to the sun, and when thoroughly desiccated packed for market.

In the departments of Indes-et-Loire and Lot-et-Garonne immense ovens purposely constructed for prune cooking are used, but the proprietors often suffer loss from want of more commodious cooking apparatus, especially in in windy or stormy weather, when the fruit falls in an embarrassing abundance, and he finds himself without means of immediately curing or preserving it. Most prunes are subjected to a preliminary washing to free them from dust or sand that may have adhered to them in falling to the ground. After washing, the fruit is exposed to the sun or air on beds of straw, or the trays upon which it is to be cooked, to rid it of all humidity. When dry it is spread in a single layer on the tray and at once submitted to the oven. The trays used in rural districts are quaint affairs, varying in form, dimensions, and construction, according to locality. They are made during the winter months by peasants, are clumsy and cumbersome, and the only excuse for their use is that the peasant can not afford to buy, and is not skillful enough to make better ones. They are very primitive in their construction, consisting of a frame made of hoop, to which is fastened a wicker-like bottom fashioned from rushes or willow twigs. They hold from 12 to 18 pounds of green fruit, representing about 4 or 6 pounds of prunes. Care is exercised in preparing the oven for the first cooking that the degree of heat shall not exceed 50 degrees centigrade, and in the second not over 70 degrees. If the heat is too strong, an ebullition is produced in the fruit, the skin bursts, the juice discharges, the prune becomes sticky, loses its flavor, and consequently its commercial value. After each cooking, which occupies about six hours, the fruit is removed from the oven and exposed to the air. When the prunes are cold they are carefully turned by women specially charged with this duty. They avoid disturbing the fruit while it is warm, as the touch renders it glutinous and prevents the juice from congealing. The third cooking is performed at a temperature of 80 to 90 degrees, and occasionally at 100 degrees. This, like the two preceding, should be conducted under most intelligent care. After the third cooking the prunes are sorted, and such as are found imperfectly cooked are again submitted to the oven. The degree of perfection in cooking is obtained when the fruit presents a dark purple color, solid and brilliant surface, malleable and elastic to the touch, and when the kernel is well done and intact in the shell. When these conditions are not obtained the kernel ferments and alters the entire prune which very soon molds and becomes worthless. Each cooking should not consume more than six hours. In the last, however, the process is sometimes prolonged, depending upon the condition of the fruit. The fruit loses

about 70 per cent. of its original weight. The dark color depends largely upon the degree of maturity at time of gathering. The brilliancy of surface has no other commercial value than proving the cleanliness observed in preparation and attracting the attention of buyers. Besides the different usages of the prune as an aliment, it is also employed in producing an agreeable brandy.

CLASSIFICATION.

Prunes are divided into ten categories, taking the number of prunes necessary to a pound as a basis, and were formerly classified as follows: 1, trash or refuse, more than 125 to the pound; 2, small prunes, 120 to 125 to the pound; 3, small ordinary, 110 to 115 to the pound; 4, fine ordinary, 100 to 105 to the pound; 5, superior ordinary, second, 90 to 95 to the pound; 6, superior ordinary, for exportation, or half choice in France, 80 to 85 to the pound; 7, first choice, 70 to 75 to the pound; 8, extra choice, 60 to 65 to the pound; 9, imperial, 50 to 55 to the pound; 10, imperial flower, 40 to 45 to the pound.

This classification offered opportunities to sell inferior prunes for those of good quality, and to prevent this abuse was changed and simplified as follows: No. 1 represents 90 to 92 to the pound, No. 2 represents 80 to 82 to the pound, No. 3 represents 70 to 72 to the pound, No. 4 represents 60 to 62 to the pound, No. 5 represents 55 to 56 to the pound, No. 6 represents 44 to 45 to the pound, No. 7 represents 40 to 41 to the pound, No. 8 represents 34 to 35 to the pound, No. 9 represents 30 to 31 to the pound.

EXPORTATION.

When ready for exportation the fruit is pressed flat between two cylinders covered with rubber, and then packed into cases by a special machine called a packer. Many dealers still perform this operation in the primitive manner of foot pressure, which is simple, speedy, and equally as satisfactory. Bordeaux is the principal center of this particular commerce, which is yearly increasing. Besides the large amount of prunes exported to European countries by way of rail, there are about one hundred vessels annually leaving this port loaded with this valuable and succulent product. The most important exportation of this production is to the United States. During the past eight years $4,553,000 worth of prunes, or an annual average of $569,125, have been invoiced through this consulate as will be seen by the following:

Years.	Value.
1880	$219,736.68
1881	525,052.58
1882	369,150.64
1883	661,166.69
1884	577,480.58
1885	792,640.96
1886	840,299.19
1887	568,356.82
Total	4,553,884.14

OVENS.

In the beginning of the prune industry many devices were employed for their proper conservation. The first ovens were very primitive, and the work of preparing the fruit for market laborious. At present there are many different kinds of ovens in use, possessing more or less distinct features, but about the same in general principles. The most generally used are the "Bournel" and the "Marletean" ovens. The only ovens in use are of French patent and make.—BORDEAUX, *September 5, 1888.*

GEO. W. ROOSEVELT,
Consul.

COAL-MINING STATISTICS OF BELGIUM.

The following is a comparative table of the operations of Belgian coal mines for the years 1886 and 1887:

Provinces.		Number of mines in activity.	Laborers.		Total expenses.	Average cost price per ton.
			Number.	Average annual wages.		
Hainaut	1887	180	75,322	$151.89	$19,595,824.80	$1.45
	1886	185	75,100	146.87	19,655,545.76	1.53
Namur	1887	14	2,025	140.89	462,108.97	1.29
	1886	17	2,276	132.40	509,122.61	1.32
Liege	1887	74	23,392	175.63	6,756,177.30	1.48
	1886	78	22,906	167.33	6,351,776.68	1.55
Total, Kingdom	1887	268	100,739	157.29	26,814,111.07	1.46
	1886	280	100,282	151.12	26,516,445.05	1.53
Increase	1887	.....	457	6.17	297,666.02	.....
Decrease	1887	12	.....	.....	.....	.07

Provinces.		Total production.	Total value of production.	Average selling price per ton.	Balance-sheet.	
					Profit.	Loss.
		Tons.				
Hainaut	1887	13,470,060	$20,886,608.80	$1.55	$1,536,791.45	$246,007.45
	1886	12,801,540	20,352,342.34	1.59	1,118,145.50	421,348.92
Namur	1887	359,255	441,497.73	1.23	6,358.19	26,969.43
	1886	384,660	475,171.21	1.24	3,317.09	37,268.49
Liege	1887	4,549,309	7,172,985.89	1.58	546,875.16	130,462.56
	1886	4,099,343	6,683,093.99	1.63	567,047.51	235,730.20
Total, Kingdom	1887	18,378,624	28,501,092.42	1.55	2,090,024.79	403,439.44
	1886	17,285,543	27,510,607.54	1.59	1,688,510.10	694,347.61
Increase	1887	1,093,081	990,484.88	.....	401,514.69	.....
Decrease	1887	.....	.....	.04	....	290,908.17

BRUSSELS, *August 16, 1888.*

WILLIAM SLADE,
Consul.

COMPARATIVE COST OF MANUFACTURING STEEL RAILS IN PENNSYLVANIA AND IN ENGLAND.

In my report on coal, iron ore, and pig-iron published in CONSULAR REPORTS, No. 64, of 1886, I gave the comparative cost of pig-iron making in England (Staffordshire) and America. I have extended my inquiries to other parts of England, principally the Middlesborough district, and to Pennsylvania recently, and found the relative positions given in my report corroborated by these recently-obtained facts. Pig-iron, however, plays so important a part in an economic sense, and is of such wide interest to the industrial world, that it will be necessary to state here the more detailed facts, especially as they bear so predominatingly upon the price composition of steel rails.

It will be found that the price differences of labor on the spot where manufacturing is conducted are very small between the two countries in steel rail making, and even in pig-iron making not very material. The main differences are in the transportation expenses. Where one or the other—the ores, coke, or coal—have to be transported hundreds of miles to the furnace, iron can not be made as cheaply as where the furnace is so situated that all these materials are found within easy reach by carting, and are dumped into the barrows to be raised up to the cupola, as in some parts of America and England.

Iron, however, is of as varied a nature as wool. Iron fit for one purpose would not answer for others, and where comparisons are being made with steel rails made on the Bessemer process, as in America, the same relative quantities have to be found, if the comparative statement is to be of value. In England the Bessemer process is mostly used, the same as in America. Hematite ores used in the process are getting very scarce, however, in England, and large quantities are imported, from northern Spain principally, the same as in America. The native ores are, however, used very largely, too, in the basic process, and I shall give an account of cost of both processes in England, the Bessemer and basic. In America the latter is not employed, and very large ore beds, most advantageously situated in the immediate neighborhood of rich coal fields, can not be made use of for steel rail making, as the Bessemer manufacturers, as a matter of note, control the patents and the proprietary rights of this process too, and have not permitted to others their use for the purpose of manufacturing basic steel, save under conditions that would render the industry unprofitable.

In England the manufacture of steel rails has almost entirely been removed to the sea-shore. The transportation of the ores, as well as the transportion of the finished rails for export, is, therefore, reduced to one carriage from the ocean steamers to the furnace and from the mill to the steamers, with but very little intervening additional expense. Large steel works

situated in Sheffield, where I had expected to obtain information on the subject, had removed their rail mills to Workington, on the west coast of England. Middlesborough and neighborhood towns on the Tees are large producers of steel rails. Here the advantages for shipping and receiving are very great. The ocean steamers are wharfed alongside the works and the unloading and reloading on trucks are all the intermediate labor and expense required. The native ores for basic steel are not far distant. The Durham coal-fields supply coke at a comparatively small transportation expense, according to the distance, from 2 to 3 shillings. The foreign ores are brought to the wharf close to the furnace, and so all advantages are made use of to save where alone savings are obtainable in the elimination of distance by judicious locating.

PIG-IRON.

Mentioning to one of the leading furnace owners of Middlesborough, an accomplished engineer, that two furnaces in the neighborhood of Pittsburgh turned out 2,800 tons per week, he gave me as his opinion that he does not find the American furnace system of very large output per furnace advantageous. Others have expressed the same views to me. "The original plant costs the same relatively whether two small furnaces or one large one. The number of men is the same per ton, and is regulated by the output. The high rate to which the American furnaces are put is a heavy wear and tear on them." He has blown out a furnace lately which needed no relining for sixteen years; the large furnaces in America need it every two years. Each of his furnaces has made during that time nearly 400,000 tons of iron, which, at 1 shilling per ton, would have more than paid itself. The gentleman stated readily, and from his own observation, that men in America work much harder than in England.

As to mining in the Cleveland district, the ore is of a soft nature and easily mined; it is of 31 to 32 per cent. Some of the mining is surface mining and other by shafts. A miner can mine easily 5 tons a day, working eight hours, for which he gets 10 pence a ton. In very rich seams they mine as much as 6 to 7 tons. The employment is very regular, and 4 shillings a day is about the average for pretty nearly the whole year at the present time. The wages would be the same in bad times, too, only with the difference that the men would then have four to five days work a week only.

The differences in the labor cost in pig-iron making are caused principally by the quality of ore, the richer ores naturally requiring less wheeling, etc., to the ton of pig-iron.

The coke costs in Durham, put on cars, 8 shillings, or $1.94 per ton; transportation to Middlesborough average two-sixths, or 60 cents per ton; total, $2.54.

The cost of pig-iron is as follows:

Cost of Cleveland iron used for basic steel.

	s.	*d.*	
3¼ tons of ore at 4*s.* (96 cents)	13	0	$3.14
1 1/10 tons of coke at 10*s.* 6*d.* ($2.55)	11	6.6	2.80
⅛ ton of limestone at 3*s.* 6*d.* (84 cents)	2	0.4	.49
Labor	4	0	.97
Wear and tear, repairing, stores, etc	2	0	.48
Office expenses, etc	0	6	.12
Total	33	1	8.00

Hematite iron.

The iron is Spanish ore of 50 per cent. brought from Bilboa. Cost, 7*s.*; freight, 6*s.* 6*d.*; total, 13*s.* 6*d.*, or $3.28 per ton.

Cost of iron for Bessemer rails.

	£	*s.*	*d.*	
2 tons of Bilboa ore at 13*s.* 6*d.*	1	7	0	$6.56
1 ton of coke at 10*s.* 6*d.*	0	10	6	2.55
⅛ ton of limestone at 3*s.* 6*d.*	0	1	4⅛	.33
Labor	0	3	3	.79
Wear and tear, etc	0	2	0	.48
Office expenses, etc	0	0	6	.12
Total	2	4	7⅛	10.83

The four furnaces of the firm turned out in the week of November 12, 1887, which may serve as an average: Cleveland iron, 665 and 507 tons = 1,172 tons; and in two furnaces, hematite iron, 836½ tons. Total, 2,008½ tons, at a cost in labor of £351 19*s.* 2*d.*, or 3*s.* 6.1*d.* per ton, equal to 85 cents.

Of course, it is not possible to exactly state the precise cost of labor of each species of iron made simultaneously in the different furnaces for which one general labor account is kept. The cost, as stated here, is pretty nearly the same as in other Middlesborough furnaces. From the proprietor I have obtained a specified statement, a copy of the pay-roll of every laborer employed, and wages paid, which foot up as stated above. Other iron-masters gave me the same cost on inquiry.

The statement of another firm is for four furnaces of 1,674 tons only. Two of these turned out 744 tons, one 522 tons, and one 408 tons. Ore, 3¼ tons in Cleveland iron, 2 tons in hematite iron; coke, 1 1/10 tons in Cleveland iron, 1 ton in hematite iron; coal for calcining, 1/10 ton; labor, 3*s.* 6*d.*, average; office expenses, rates, taxes, 9*d.*

AMERICAN BLAST-FURNACE WORK.

The American furnaces are owned by the company manufacturing steel rails. They have eight furnaces, with an output per week of 3,000 tons. The works are well managed and have all the modern improvements. The company makes the greater part of its own iron and uses about 30 per cent.

of Cornwall iron in its output of steel rails. They use for their iron Cuban and European ore of 58 per cent. The quantities used per year are 60,000 tons from Cuba and 200,000 tons from Europe. The cost of ore per ton of pig-iron is $11, or, at 58 per cent., $6.38 per ton at the furnace, against 2.90 of the same percentage of iron in the ore at Middlesborough. Seventy-five cents duty added would still leave $2.73 to be accounted for as covering the freight surplus charge from Bilboa or North Africa to Philadelphia over freight cost to Middlesborough and the inland transportation from tide-water to the furnace, a distance of about 80 miles.

The fuel.

The fuel is three-fourths coke and one-fourth anthracite coal. The coke costs $4.75 per ton delivered at the works; the coal $2.85 per ton. The coke at Connellsville was then $2 per ton, but at the later date of my visit in the coking region it had receded to $1.75, put on board cars, and would, therefore, stand at $4.50 delivered at the furnace. The difference would be in the transportation expense, which would seem rather a high rate. Coke, however, has been sold as low as 90 cents per ton at the ovens, and even at the present price is cheaper at the place of manufacture than at the ovens at Durham, where the English coke is obtained.

COAL MINING AND COKING.

Not knowing whether I shall be able to recur again to the subject in the near future, and as it bears no small part in the economy of production in the elements of iron, and therefore steel making, I will give the leading competitive points in this important product here. Connellsville, Pa., and Durham, England, are the leading coking centers of the two countries. In mining the natural advantages are on the American side, where the seams are much thicker, about 8 feet against some 4 feet coking seams in Durham. The Durham cost is as follows:

Labor of mining and putting into trucks, 2*s.* to 2*s.* 3*d.*, or about	$0.51
Other charges, 6*d.* to 8*d.* a ton, or about	.14
Royalty, 5*d.* to 9*d.* a ton, or about	.14
Total	.79

There is realized from 1 ton of coal 60 to 62½ per cent. of coke, so that it requires, say—

1⅗ tons of coal to 1 ton of coke, or	$1.32
The cost of coking is 9*d.* to 1*s.* 3*d.*, or	.24
Labor in drawing and filling, repairing, smiths' work, etc., all labor putting on board cars, 1*s.*	.24
Total	$1.80

I am told by coal and coke operators that 8*s.*, or $1.94, leaves not much above cost, interest and fixed charges included. The miner is paid for the slack the same as coal.

Connellsville coke.

The ruling prices of coke in Connellsville, from 1881 to 1886 inclusive, taking the highest and lowest prices for the years, were:

1881	from	$1.50	to	$1.75
1882	"	1.15	"	1.75
1883	"	.90	"	1.20
1884	"	1.00	"	1.10
1885	"	1.10	"	1.20
1886	"	1.20	"	1.50

The average for the six years can not be taken higher than $1.35. The mining wages are on a sliding scale; the scale is as follows:

Furnace coke, f. o. b. cars, selling at $1.35, the rate per 100 bushels is for mining and loading room coal	$0.90
For mining and loading heading coal	1.05
For mining and loading heading coal, wet places	1.12½

For each and every advance of 10 cents per ton over and above $1.35 per ton in the price of furnace coke, f. o. b. cars at ovens, 2½ cents per 100 bushels shall be added to the above prices for mining and loading coal, etc.

At this average of $1.35 the mining wages would then be, taking $1 as the average per 100 bushels (27 bushels to the ton), 27 cents, and at $1.75 per ton of coke, the wages would be 10 cents more (4 × 2½ cents) per 100 bushels, or 2.7 cents per ton; total, 29.7 cents per ton of 2,000 pounds; brought to the gross ton of English weight, 33 cents. The mining cost is, therefore, considerably less than in England. The yield of coke out of a ton of coal is, for Connellsville coal, 66 per cent., requiring 1½ tons of coal for 1 ton of coke.

A fair view of the cost of coke in Connellsville may be taken from Mr. Joseph D. Weeks's report on the manufacture of coke to the Department of the Interior for 1885. I will, for corroboration, give his statement in full relating to the cost of coke making, which can then be set against the corresponding English items for comparison:

There has been considerable discussion near the close of 1885 as to the actual cost of coke to the producer. I have before me three statements of cost. Two are for actual workings for the month of November, the third is the estimate of a miner. They are as follows:

	No. 1.	No. 2.
Average cost of coal to ton of coke, including royalty	$0.767	$0.818
Average labor at ovens	.270	.328
Average supplies	.073	.070
Average repairs	.062	.029
Total	1.172	1.245

The above are actual costs, not estimates, and may be taken to fairly represent the average, not the best located works. The items of repairs may vary somewhat, as well as the cost of coal, but No. 1 is a fair cost, including royalty, which in these two cases is 16 cents a ton of coke. It will be noted that in neither case is anything allowed for interest on investment, nor for the sinking the cost of the ovens when the coal is exhausted

The miner's figures of cost are as follows; they represent the daily expenses of a bank of 40 ovens, twenty being drawn each day:

Cost of coal (on royalty one-half cent per bushel)	$12.35
Seventy cars of coal (mining 27 cents a car)	18.90
Boss's wages	2.00
Oil, posts, rails, etc.	1.50
Charging ovens	2.00
Leveling	1.60
Drawing twenty ovens	11.00
Interest on capital	2.50
Syndicate's commission	6.30
Total	58.15
Production 58.8 tons coke at $1.20	70.56
Less daily expenses	58.15
	12.41

It will be noted that this makes the cost of getting the coke on the cars, ready for shipment, 98.9 cents. It will be seen that this estimate allows only $1.50 for supplies, or less than 3 cents a ton, as against 7 cents in the above operator's account. Nothing is allowed for repairs, which are at least 5 to 7 cents—as an average, say 6 cents. Nor is there any allowance for labor in mining and hauling the coal, other than the miner's wages. Add all these to the miner's cost, and it would not come much below the operator's cost.

If, then, 98.9 cents is the net cost of coke, including mining, royalty, coking expenses, and labor, interest on capital and syndicate's commission, according to the miner's view, and $1.17 covers all additional allowances for supplies, repairs, hauling the coal outside the mine, etc., as stated from the manufacturer's side, $1.172, then, would be as per English weight + 11 per cent., 0.129, or $1.30, against $1.79 to $1.92 English.

The several positions would be in cost of coke—

	Connellsville.		Durham.
	Short ton.	*Long ton.*	
Average cost of coal to ton of coke	$0.607	$0.673	$1.08
Average royalty	.16	.1776	.23
Labor at ovens, supplies, and repairs	.405	.45	.48
Total	1.172	1.3006	1.79

LABOR COST IN PIG-IRON IN AMERICA (EASTERN PENNSYLVANIA).

The furnaces are worked by two shifts of twelve hours each. Each shift is composed of 16 men, or 32 men for the twenty-four hours on each furnace—in all 256 men for the eight furnaces, which is per man, at the 3,000 tons weekly output, 11.72 tons. The boss men are paid from $1.65 to $1.75 per day, the furnace men $1.30 per day, and ordinary laborers, etc., $1.16 per day. The average of all employed is $1.30 per day. The seven days at $1.30 make $9.10 per man. We have, therefore, to arrive at the cost of furnace work per ton by

$$256 \times \$9.10 = \frac{\$2,329.60}{3,000},$$

which gives 77.65 cents as covering all furnace labor expense of making a ton of pig-iron. The general labor cost was given me by the president as $1.25, which leaves, therefore, a margin of 47.35 cents for all incidental and yard labor of handling ore, coke, coal, and iron, unloading and loading, not included in the direct furnace work.

The general expense is given me as 12 cents per ton; sundries, supplies, electric light, etc., as 50 cents per ton—in both instances about the same as in the English account.

Taking the different items, then, we have the following positions in Bessemer pig-iron in eastern Pennsylvania, made of Spanish and Cuban ores, against English iron of the same class:

	Eastern Pennsylvania.	Middlesborough.
Ore	$11.00	$6.56
Limestone	.40	.33
Fuel	4.50	2.55
Labor	1.25	.79
General expense	.12	.12
Sundries	.50	.48
Total	17.77	10.83

It will be seen that the only marked differences lie in the ore and fuel account, due to causes explained above.

COST OF MAUFACTURING BESSEMER STEEL RAILS IN ENGLAND.

The steel mill from which I have taken this account works in shifts of twelve hours. They make 40 charges per day, have 2 converters, and turn out 7 to 8 tons in each heat. The weekly output is 1,500 tons, and the number of men employed is 600. The weekly pay-roll is £950. The average cost of labor per ton is, therefore, 12*s.* 8*d.*, or $3.07 per ton. The several items in this sum stand as follows:

	s.	*d.*	
Labor in converting	3	6	$0.85
Labor in rail-making from the ingots	8	0	1.94
Additional labor	1	0	.24
Total	12	6	3.03

The cost of pig-iron is taken as 45 shillings per ton; spiegeleisen, 80 shillings per ton.

	s.	*d.*	
It takes 1 1/10 tons of hematite iron at 45*s.*	49	6	$12.38
It takes 1 ½ hundred-weight of spiegeleisen iron at 4*s.*	6	0	1.44
It takes 14 hundred-weight of coal at 7*s.* 6*d.* per ton	5	3	1.26
Labor	12	8	3.07
Total	73	5	18.15

The present price of steel rails is £3 17*s.* 6*d.* This leaves no margin for profit and barely enough to cover the charges. Asking whether the 4*s.* 1*d.* between the selling price and cost price could not be considered in the

light of a profit, I was answered, "Should we make the sum of 4*s.* 1*d.* profit we should be pleased. It is a long time since rail-makers could see a certainty of 4 shillings per ton."

It must be understood that this is about the lowest price steel rails have ever reached in England, and it is the general expression that it is hard work now to get a new dollar for an old one. That the price is not a paying one can be seen from the favorable consideration which is given by English manufacturers to the proposal of German rail manufacturers to revive the old steel rail combination, which has in view the raising of the price and the parceling out of the output and the trade between the English, German, and Belgium manufacturers.

The wages are, for fitters, turners, roll turners, and brick-layers, 5*s.* 6*d.*, or $1.34 per day; for smiths, enginemen, and joiners, 5*s.*, or $1.22 per day; for men at rolls and furnaces, average 7*s.*, or $1.70 per day; and for outside men, 4*s.*, or 97 cents.

COST OF BASIC STEEL RAILS.

The mill is one which, in the opinion of iron-masters, is supplied with the best improvements and equal to the best American mills in labor-saving arrangements, etc. I can not say that in going over it I came to a like conclusion. I find the American rail mills which I have seen far ahead in improvement and the introduction of labor-saving devices over any at least that have come within the scope of my present observation in England. On the whole, it is conceded willingly by English makers that America surpasses them in the output and improved methods of manufacture.

The iron used in this steel is Cleveland pig, but the cheaper price per ton is balanced by the greater amount of iron required for a ton of rails. About 800 men are employed, who draw in weekly wages (the week for which the account stands) £1,294 1*s.* 6*d.*, or $6,276, equal to $7.84 per day, or, per ton, 10*s.* 9½*d.*, or $2.62. The account is as follows:

	s.	*d.*	
1.3110 tons of pig-iron at 33*s.* 4*d*	43	8¼	$10.62
0.1410 tons of ferro manganese (spiegeleisen) and hematite	9	10¼	2.40
Fuel	5	4	1.30
Labor (converting, 4*s.* 4*d.*; rail-making, 5*s.* 11*d.*)	10	3	2.49
Additionals	8	10½	2.16
Total	78	0	18.97

The additionals are given me as being in reality 9*s.* 9*d.*, or $2.37, in excess of the other account. Labor items like brick laying, etc., contained in the labor account of the hematite rail mill, are here contained in the additionals, the difference between 10*s.* 3*d.* and 10*s.* 9½*d.*, or 6½*d.* = 13 cents. The greater part of this sum, 9*s.* 9½*d.*, however, is off-set by the credit deduction for value of ends and defectives. The "additionals" are higher in basic than in Bessemer steel. In this sum royalty, lime, limestone, tar, refractories, castings, and sundry stores, and purchases for maintenance are contained.

THE AMERICAN COST OF MAKING BESSEMER STEEL RAILS.

The time when this inquiry was made in America was in 1887, a year of high prices. Steel rails had sold during the year at prices ranging from $40 to $32—during the greater part of the year being very close to the former sum named. At the time of my visit, in December, they were about the last named price. During the year wages were raised twice, each time 10 per cent. Whether these advances are still in force, I can not tell. It is very doubtful, however, in view of the fact that steel rails are quoted now at $28.50, f. o. b., to $29, which is barely $10 above the English price, a price likely to be advanced at a very early day as being unremunerative to the makers.

The weekly output is 4,500 tons. The mill has four converters, but only three working. The men at the converters work in three shifts of eight hours each, the rail-making employés two shifts of twelve hours each. In all 1,048 men are employed in the steel works. The pay-roll for the month was about $57,000. This is $54.38 per man per month, and at twenty-five working days $2.17½ per day and $13.05 per week—about two-thirds more than the average English wages in steel mills. If we divide the amount of money paid for labor over the output, however, we shall find no such difference to exist, as these higher earnings might leave people to suppose. The weekly wages of the month of fairly even distribution of work over each week and steady employment of the men stand as $13,680, and the output of 4,500 tons gives us labor cost per ton thereof $3.04 of all moneys paid out on this heading.

Salaries and expenses were stated at 50 cents per ton. On an output of 225,000 tons, $112,000 for years of equally full output. The general labor cost was stated to me as $3.85 per ton. I can not well understand what items these additional 84 cents would comprise, as the outlays for wages of $56,000 to $58,000, I was told, cover all labor employed at the steel works. I give this as received and leave closer analysis to a future re-examination of the details.

The different items of cost are composed of the following factors, as given from the mill account:

Items of cost in 1 ton of steel rails in eastern Pennsylvania.

1 ton of pig-iron	$18.00
3 hundred-weight spiegeleisen	4.00
Fuel	2.00
Labor	3.04
Sundries	.50
Additional labor (unexplained)	.84
Total	28.38

At $27 a ton for spiegeleisen, the above $4 represents 3 hundred-weight against 1½ hundred-weight in the English statement, which is balanced by 1 hundred-weight more of iron used in the Middlesborough account. There is, therefore, in this account one-half hundred-weight more used than in the English mill.

With $3 of spiegeleisen, 1 1/20 tons of iron and $2 worth of scraps are used, and with $4 of spiegeleisen, 1 ton of iron is said to be sufficient. While the English only use in all 1.175 tons of weight, this account would give us 1.30 tons of weight per ton of rails, which, if correct, would need further explanation than I can give at the present writing. At any rate the difference in the weight would be returned again, or approximately so, in the value of scrap, ends, or misfits.

On the whole it will need no demonstration to show what has been intimated in the opening pages of this report, that the differences in the labor cost, not alone of steel making, are not very great and come very nearly the English cost, but also in the materials used in its production. The difference of cost lies mainly in the transportation expense of the component parts of pig-iron used in the manufacture of Bessemer steel.

The relative positions in steel rail making, as well as the fact of high wages, compatible with relatively cheap cost, may be realized from the comparative statement of the output of the two mills, which gave the subject of this report:

Tons of Bessemer steel rails turned out per week in a steel mill in eastern Pennsylvania, 4,500; total number of men employed, 1,048; output of tons per man employed, 4.3; average wages per day, $2.17½; labor cost per ton of all employed in steel mill, $3.04; tons of Bessemer steel rails turned out per week in a steel mill in England, 1,500; total number of men employed, 600; output of tons per man employed, 2.5; average wages per day, 5*s.* 6*d.* = $1.33; labor cost per ton of all employed in steel mill, 11*s.* 6*d.* to 12*s.* 8*d.* = $2.80 to $3.08.—TUNSTALL, *October 2, 1888.*

J. SCHOENHOF,
Consul.

LABOR CONDITIONS AT HAMILTON, ONTARIO.

The report of the Ontario Bureau of Industries for 1887, just issued, treats, among other things, of wages and the cost of living. This city furnishes reports from only 122, all over sixteen years of age. From the whole province 3,354 individual returns were received, embracing 2,981 males and 322 females over sixteen years of age.

The average yearly earnings of the males who have families were $426.75, which was $1 higher than the average for 1884–'87. With extra earnings, and earnings of wives and children, the total average income of these families was $449.61. The days of labor averaged 257¾, so that each day's pay averaged $1.70. The cost of living for each family was $412.80, and average savings of each $36.81 for the year. The 3,354 of male and female, old and young, were employed on an average 263.21 days each, and earned an average of $371.87. The average savings of each amounted to $44.76. The yearly wages of each are less by nearly $3 than the average of the past four years, and the average savings less by nearly $5. The investigations of

the Royal Labor Commission in this city in the spring developed some facts, a compilation of which, prepared at the time, may serve to throw light upon the wage conditions here.

IRON WORKERS.

An operative in the American Nail Works testified that 50 hands are employed ten hours a day. The wages are higher than in Pittsburgh or Montreal, good nailers making from $3.50 to $4 a day. Twenty boys, at $1.25 a day, are employed by the men, and no limit fixed by the union for the proportion employed. Scrap-iron is used in the manufacture of the nails.

At the Ontario Rolling-mills 250 men are employed nine hours a day, double shifts, and the hands are classified in the rolling-mills as heaters, helpers, and rollers. The heaters make $4 to $4.50, and their helpers from $2 to $3.50 per day, but the work is very hard and tends to injure a man's health. A roller makes from $5 to $6 a day, and his helper about $1.75. The wages are paid on the same scale as in Pittsburgh, but the cost of living is cheaper in Hamilton. Men who come from the other side are more satisfied here than in Pittsburgh. The Hamilton Iron Forging Company mill is in operation about ten hours a day, double shifts, and each man will work about seven hours a day. The men work by the ton; a heater makes about $6 a day and rollers about $7; helpers get from $1.75 to $2. The wages paid are double what they are in England, but about the same as in Philadelphia. There is no union among the workers here. The men who work at night receive the same wages as the day workers, though the men much prefer to work on the day shift. The company employs the heaters' helpers, and the lowest wages paid to unskilled labor is $1.15 a day, whereas in the States they only receive 65 cents. The largest iron manufactured was 400 pounds to the bar. A leading stove manufacturer thought that about 2,000 hands were employed in the fifteen foundries in the city, counting skilled and unskilled labor. The skilled hands were molders, scale makers, pattern makers, and stove mounters. The molders receive $2.25 to $3 a day; scale makers, from $1.50 to $2; pattern makers, $1.75 to $2.50. Molders average nine hours a day, and are usually through by 5 o'clock. The week hands work fifty-nine hours a week. He did not think ten hours a day was too much, except in cases of laborious work like molding. There are from 350 to 400 union molders in the city. In one shop union and non-union men work together, but there are only about 13 or 14 non-union men in the city. The hours of labor vary from nine to eleven, and the work is very laborious. The average yearly earnings of a molder, taking into consideration the time he does not work, would be $1.35 a day. Quite a number of molders save money. During a slack time, about four years ago, 10 per cent. was taken off their wages with the understanding that when trade revived it would be restored. Last summer they concluded that the time had come to restore the deduction, and went on strike because the employers would not do so. The negotiations were carried on in a friendly spirit, and concluded by the employers granting them an immediate advance of 5 per

cent., with an additional advance of 5 per cent. March 1 next. The organization was opposed to strikes and favored arbitration. The union has entered into an agreement with the employers not to ask for another raise of wages for eighteen months, in order to enable them to figure on prices. An employé of the Hart Emery Wheel Company stated that the company was established here to save the patent. Skilled mechanics are required in making these wheels, and their daily wages vary from $1.50 to $2.50, and they work ten hours a day. The raw material comes from the United States. Skilled wire-workers in the manufacture of wire-cloths for fanning-mills, windows, and locomotive smoke-stacks receive from $1.75 to $2. Some classes of wire are drawn in Montreal. Boys get $2.50 a week and receive an advance of 50 cents every six months. They become skilled workmen in from four to six years. In one factory 18 girls are employed running a light automatic machine, and make from $3 to $6 or $7 a week.

RAILWAY OPERATIVES.

Switchmen receive $1.30 to $1.40 per day and yardsmen get from $1.50 to $2 per day. Not much work is done on Sunday here, and the employés have twenty-six Sundays in the year to themselves. An engineer or fireman on the Grand Trunk is employed nine hours a day, and is paid extra for overtime at the rate of 25 cents an hour for drivers and 13 cents for firemen. A man's work is sometimes extended under exceptional circumstances to forty consecutive hours, and he has to keep awake all that time. A witness, who has been in charge of the locomotives at the Grand Trunk station here for thirty-four years, considered that the running boards on freight-cars should be 3 feet in width. Accidents caused by men falling from freight-trains were frequent. He would recommend that railings be placed along the outer edge of the roofs of cars, and thought an air-brake could be applied to freight-trains to do away with the necessity for hand brakes at a cost of about $16 per car. The same kind of automatic couplings used on passenger-cars could be adapted to the freight-cars and thus do away with the present number of accidents from this cause. A law regarding couplings, in order to be effective, would have to be made international, in order that the same kind of couplings might be in use on all American roads. Applicants for positions are always tested in order to detect color-blindness before entering the service. The station-master at the Grand Trunk at Hamilton did not know of any suitable automatic coupling, as most of them had too much machinery about them which was liable to get out of order. Another objection was that loaded cars would be so much lower than light ones that the couplings would not work.

WORKERS IN CLOTH.

The foreman of the Sanford Clothing Manufacturing Company said that nearly 2,000 people were employed in sewing for the company, in addition to about 120 employed in the building. The sewers work by the piece, and the work is let out to men who employ their own hands. These men make

about $15 a week, and they pay their hands from $2.50 to $7 per week. Trimmers and cutters receive from $8 to $15 per week. The cloth used is made both in England and Canada, but the Canadian is not quite so good as the English. A woman sewing, say ten hours a day, can easily make $1 a day and over. For the first few weeks apprentices get little or nothing, and then they are started at $2.50 a week. Women who do this sewing complain that they can not make enough. A great many were widows, and others supported their husbands. The houses of the sewing women were comfortable, and all their needs were supplied, and when they came about the company's store they appeared comfortably and even stylishly dressed. The wages are lower now than they were a few years ago, but with the improved machinery in use he thought the hands can make more. He paid $1.25 for having a child's coat made; mens' pants brought 12 to 50 cents. The men and women are paid exactly the same rates. All material is supplied except the thread, and the prices named do not include the buttonholes, which are done by machinery.

RATTAN CHAIR WORKERS.

There are six factories in Ontario making children's carriages and chairs from the pith of rattan. Boys and girls were employed in the factories, earning $4 to $5 a week. The trade is increasing. The pith referred to principally comes from Hamburg, Germany, and is brought to New York as ballast and bought there. On the reed 25 per cent. duty is charged, though if the rattan is imported whole it is free.

WORKERS IN TOBACCO.

A tobacco factory here employs about three hundred hands of both sexes, ranging from fourteen to forty years of age. The average wages paid was $1.25 for grown up people. As a rule the parents come to the factory and make the bargain for the employment of their children, whose wages range from $3 to $4.50. The children are not employed by the firm, but by the journeymen workers. When a boy becomes well up in the work he is apprenticed for three years, and then becomes a journeymen. The raw tobacco comes from Virginia and is used because a good article can not be grown here. The employés work nine hours a day. An experiment was made some years ago in shortening the hours of labor, and the firm found that it got as much work out of their employés in nine hours as they formerly did in ten hours, and were very well satisfied with the system. Saturday was the pay-day. The firm rewards merit by presents of money at the end of the year, paying out in this way from $1,500 to $2,000 annually.

PRINTERS AND TYPE-SETTERS.

An ex-president of the typographical union testified that 32 cents per thousand ems was paid to piece compositors on morning papers in Hamilton. Weekly hands in job offices receive $11. All matter, except the advertisements, is set up by the piece compositors. Ten hours is a day's work for week

hands. About eight journeymen printers own their own houses, and five ex-journeymen now have job offices of their own. No plate matter is used upon the newspapers. There is a death benefit of $75 connected with the typographical union. No black-listing has occurred in Hamilton. The wages here are lower than in the United States.

TELEGRAPH OPERATORS.

Operators work nine hours a day, and first-class men receive from $40 to $55 per month, and second-class men from $30 to $45. Female operators receive from $30 to $45 a month, and could not do press work. The operators are paid monthly and wished to be paid oftener, but their application had never been attended to. Wages were lower here than in Manitoba and the United States.

CLERKS AND SALESMEN.

Boys in grocery stores get about $2 a week, and clerks average $500 a year. They are employed from 7 a. m. to 7 p. m., and until 10 p. m. Saturdays.

SPINNERS.

In the cotton and woolen mills of Dundas the men earn from $1.50 to $2 a day, the boys $3 a week and upwards, and the women and girls from $3 to $6 a week. The hands all work sixty hours per week, but the time is arranged so that they get a half-holiday on Saturday. If the hands are late they are fined one hour's pay. In the Hamilton cotton mills boys and girls go to work at fourteen years of age, and they are not employed without first bringing a certificate regarding their age from their parents. The average wages earned by a man was from $8 to $10 per week, a woman can earn from $6 to $8 per week, children from fourteen to sixteen years of age earn from $2 to $4 per week. A weaver has charge of four looms. The work is not unhealthy. Common laborers are paid $1.10 per day. The hours of labor are sixty hours per week, with Saturday half-holiday, and payment is made fortnightly.

OTHER TRADES.

Painters receive $1.25 to $2.25 per day; millers, $8 to $10 per week; shoe-makers, $10 to $15 per week; and female operators on kid work from $5 to $9. The average pay of a farm hand is $175 per year, with board. Men, women, and children are employed in the fruit industries; men receive $1 a day, women from 75 cents to $1, and children earn from 50 to 75 cents.

FRUGALITY AND THRIFT OF OPERATIVES.

The secretary of the Hamilton Loan and Building Association testified that each share of stock in his company represented $2, and there were 1,347½ shares in existence, payment on which was made at the rate of $1 per month. Of this number 649½ shares were held by mechanics, 203 by clerks, 100½ by women who earn their bread as servants and sewing girls, and 33 by lawyers and doctors; 128 houses have been built, all by working classes except three. It is calculated that the loans will be paid off in eight

years if the borrower pays 33 per cent. on his loan, and he gets the money for 4½ per cent. and participates in the profits of the society. No speculators are allowed to enter the society. The only security accepted is a first mortgage, and the society only does business in the county of Wentworth. The president of the typographical union thought an ordinary printer working at the case would find it difficult to pay for a house in ten years. He did not approve of a working-man owning his house unless he had a permanent situation, because it ties him down too much. He, himself, merely put his money into a house and lot because he knew he could easily realize the amount on it again.

COMPLAINTS OF OPERATIVES.

A Burlington engineer thought that improved machinery being introduced has not benefited the skilled employé, but that the chances for him remaining in employment become more and more precarious every day. He did not think the working-people to-day enjoyed all their rights, and they did not have the same opportunities now; in fact, the improved machinery was encroaching upon their domain and tending to crowd them out. He did not think the financial condition of the working-man had improved during the past twenty-five years, and the condition of the farmer was worse. A machinist complained that wages were higher in England than in Canada for skilled workers, or at least the money could be made to go further there.

IMPORTED LABOR.

The Dominion immigration agent testified that during the year just closed 7,919 immigrants had come into his district, 3,421 of whom were English, 796 Irish, 1,434 Scotch, 790 Germans, 1,297 American citizens. He could not say how many of these came on assisted passages, the rules of the department regarding assisted immigrants granted such assistance only to agricultural laborers and domestic servants, and that only to the extent of $2.50 each. Of the number of immigrants mentioned only fifty-nine were mechanics. He did not think that over 1 per cent. of the immigrants arriving in his district were pauper immigrants.—HAMILTON, ONTARIO, *September 13, 1888.*

ALBERT ROBERTS,
Consul.

THE INDIA RUBBER TRADE OF UPPER BURMAH.

Mr. Warry, of the British consular service in China, at present stationed as political officer at Bhamo, has made a report to the chief commissioner on the India rubber trade of the Mogoung district. Rubber was first exported from Upper Burmah in 1870, and until 1873 the trade was free to all. Since the latter year, however, the forests have been worked under the monopoly system, five Chinese firms being the joint concessionaires, two supplying the money and three superintending the work. The price ranged from 60,000 to 90,000 rupees per annum, but in the present year the sale of the right produced a lakh of rupees. The forests occupy an extensive Kachin district north of Mogoung and stretching east across the Chinese border. The Kachins are exceedingly jealous of interference with their trees, and although at first they made the mistake of over-bleeding them, they are more careful now, and though the trees seen by Mr. Warry were covered with innumerable small incisions, even

up to the tiny topmost branches, they were obviously not drained to the extent of half their power. Mogoung is the head-quarters of the trade; four-fifths of the yearly supply is brought in there by Kachins in the employ of Chinese, the remaining fifth is purchased in the district by Chinese agents of the lessees. The practice is for the Chinese manager in Mogoung to make liberal advances to the Kachins to defray expenses during the collecting season; when the rubber is brought in the refund is made by selling the rubber to the manager at half the market price. The traveling Chinese agents, who also collect rubber, merely travel from place to place, buying such quantities as the Kachins offer, but as the latter have no standard weights they are usually cheated to the extent of about 70 per cent. The profit on this difference of weight more than pays the expenses of the agents. In most cases rubber is the subject of certain transit charges through the Kachin districts, tsawbwas, or local chieftains, levying a certain toll—perhaps two or three balls out of a hundred. So long as these charges do not amount to 10 per cent. there is no complaint. Whatever the toll, the Chinese manager and Kachin owner bear the loss in equal shares; but the latter is amply compensated by being housed and fed at the expense of the Chinese during his stay in Mogoung. Last year a new district was opened, and a Chinese capitalist employed 400 Chinese and Shan laborers to work the forests in the neighborhood of the amber mines. The local Kachins objected to the inroad and insisted on their right to the forests. A compromise was reached, 200 of the laborers being sent back at once, the remainder collecting rubber under Kachin supervision, to whom 10 per cent. was to be paid, and 200 Kachins, paid at the current rate, took the places of the 200 dismissed coolies.

MOORISH AGRICULTURE.

In the course of a report recently laid before Parliament on the agriculture of Morocco, the British consul at Tangier remarks on the prejudice of the Government against the exportation of grain, which is carried to such an extent that shipments between two Moorish ports are not allowed. The ground of the prohibition is that the price of bread, which forms almost the only food of the poorer classes, would rise so as to bring the people to the verge of starvation. There are no roads properly so called, and therefore the transport of grain by land is very expensive, so that the price varies greatly in districts comparatively close to each other. The quantity of seed sown in each district is only what is judged sufficient for the wants of the immediate neighborhood, and when the season is good the crop will sometimes not repay the cost of cutting. Within sight of Europe, and only four or five days by sea from London, the consul has seen fields of corn abandoned because they would not be worth the cost of harvesting. In the Tangier district much of the land is Government property, being held by a kind of military tenure; near the towns and among the hill tribes, mosques, and other religious institutions have considerable endowments in real property which have been bequeathed to them; many Moors also own large properties, but a considerable portion of the land is held by small farmers on a description of metayer tenure, one quarter of the crop being paid to the landlord. Labor is paid on the same system, the plowman receiving a fifth of the crop, a certain quantity of corn for food while working, and a pair of shoes. For this pay he plows the land, tends a pair of oxen, sows, reaps, and threshes. When there is a heavy yield of corn, and speed in harvesting is desirable, the custom is to call all the villagers in for one day to do the work without pay. The price of agricultural labor is about 9 pence a day for men and half that for women. Native farmers are averse to manuring the ground, alleging that it only causes the crop to be choked by weeds. Rotation of crops is practiced, barley, peas, beans, and lentils alternating in dry ground; wheat, beans, millet, and maize on colder ground. In former years Moors used to take a pride in breeding good horses, and certain localities were celebrated for the excellence of their breeds. But the art appears to be now lost. The ideal barb is scarcely to be met with, but there are still numbers of really good horses in the country. Wealthy Moors will pay a higher price for a fine mule than for a good horse. Camels are the pack animals, and donkeys for lighter loads.

PERSIAN RAILWAYS AND COTTON GOODS IMPORTS.

Up to the present the Imperial Government has awarded two concessions for railways in the Shah's dominions, one to a Belgian company, the other to Hadji Mahommed-Hassan, a wealthy Persian merchant.

The first, which comprises only a short line from Teheran to the holy shrine of Shah Abdoul-Azzim, a distance of not over 11 kilometers (6.8 miles), is now virtually completed. It has been built though at very great cost, the rails and machinery necessary having all been transported from Resht, the Caspian sea-port, over the Elburz Mountains to this city upon mules. The second, still in course of construction, will measure about 20 kilometers (12.4 miles). It is designed mainly to facilitate the transportation of ore from the iron mines in the vicinity of Amol, and is intended to connect that town with the port of Mahmûdâbâd, on the Caspian. Its proximity to Russia, from whence the requisite material for its construction can be obtained by water with so much greater ease and so much less expense for transportation, will make its original cost fall considerably below that of the line first mentioned. Both of these enterprises, it will be observed, are local in their character and of but limited scope.

When it comes to the consideration of a great railway system such as the actual requirements of Persia demand, the laws of economy alone, in my opinion, indicate the necessity of beginning operations either at the Persian Gulf on the south, or at the Caspian Sea on the north, or from both ends of the line simultaneously. In the second and last case, however, the northern section would have no alternative but to purchase its material in Russia, or pay duties and cost of transportation through Russian territory, whilst the southern section could freely supply itself from the markets of the world at large. The general question of Persian railways is one to which European capitalists appear at this moment to be giving special attention.

ISPAHAN'S IMPORTATION OF COTTON GOODS.

A recent investigation has elicited the fact that the city of Ispahan, a distributing point for southern Persia, annually imports from Great Britain alone £125,000 sterling worth of cotton goods, mainly gray shirtings, which, being afterwards dyed with indigo on the spot, constitute the ordinary blue material so generally used for clothing among the native peasantry. If American cotton cloth can successfully compete with that of England in the markets of China and Japan, there would appear no good reason why it should not do the same here. A practical demonstration of the possibility of supplying the same article at more favorable rates than now prevail would not only secure us control of this entire trade in both north and south Persia but give it at once a decided impetus. — TEHERAN, *September 4, 1888.*

E. SPENCER PRATT.

TOBACCO MONOPOLY IN FRANCE.

Referring to the several reports published in Nos. 2, 22, and 33 of the UNITED STATES CONSULAR REPORTS upon the tobacco monopoly of France, I beg to submit for your information more recent statistics on the subject. The revenue derived by the French treasury since the establishment of the monopoly has constantly increased till the year 1885, when the receipts under that head reached their maximum, viz, $72,883,000. In 1886 the diminution has been quite marked, amounting to more than $1,000,000.

In 1887, however, there was a slight increase of some $39,000. The following statement shows, for the period from 1878 to 1887, the quantities of tobacco sold in France, exported to Algeria and foreign countries, and the sum total of receipts:

Year.	Total quantities sold.	Total receipts.	Increase.	Decrease.
1878	71,078	$64,422,000	.....	.....
1879	71,914	65,010,000	$588,000	.....
1880	73,987	66,807,000	1,797,000	.....
1881	75,479	68,546,000	1,739,000	.....
1882	77,203	70,299,000	1,953,000	.....
1883	78,995	71,862,000	1,563,000	.....
1884	80,191	72,883,000	1,021,000	.....
1885	80,003	72,473,000	.....	$410,000
1886	79,415	71,396,000	.....	1,077,000
1887	.....	71,435,000	39,000	.....

In order to better understand the cause of decrease in the revenue from the sale of tobacco during these last years it is necessary to compare in detail the receipts according to the different kinds of tobacco sold for internal consumption.

The following statement shows the results for the years 1884 and 1886 corresponding to the maximum and minimum amount received for manufactured tobacco sold for internal consumption:

Articles.	Receipts.		Increase.	Decrease.
	1884.	1886.		
			Per cent.	*Per cent.*
Cigars, French	$26,371,000	$25,120,000	.....	5
Cigars, Havana Manila	819,000	644,000	.....	21
Cigarettes	3,509,000	3,365,000	.....	4
Smoking, chewing, and snuff tobacco	41,480,000	41,545,000	0.6	.....
Total	72,179,000	70,674,000	.....	2

The most important reduction of receipts is due to the diminished sale of cigars, cigarettes, and snuff tobacco. The demand for cigars, and especially for expensive ones, is not now so great as heretofore, by reason of

the commercial crisis which exists at the present time, and which constrains every one to reduce expenses.

It is also highly probable that the perpetration of fraud against the revenue and the clandestine sale of fraudulently imported cigars and hand-made cigarettes has caused a certain diminution in the Government revenue.

France has been, and is still, the country where the consumption of snuff tobacco is the greatest. It was constantly on the increase till 1869, when it reached a total of 13,000,000 pounds per annum, making a yearly average of 7 ounces per inhabitant. After the Franco-German war the average consumption was reduced to 6 ounces per capita, and now, notwithstanding the improvement in its manufacture, the consumption is only about 5 ounces per inhabitant.

The statement given below shows the total of foreign tobacco imported into France during five years ending with 1886:

Year.	Tobacco leaf.	Tobacco manufactured.
1882	$5,288,000	$772,000
1883	6,812,900	775,000
1884	5,944,000	1,139,000
1885	5,790,000	463,200
1886	6,214,000	212,300

The value of tobacco leafs imported from the United States into France for the same period was as follows:

1882	$2,938,526
1883	3,804,235
1884	3,021,241
1885	2,659,466
1886	3,600,452

PARIS, FRANCE, *September 21, 1888.*

J. L. RATHBONE,
Consul-General.

CURRANT WINE.

Currant wine, such as is referred to in my report, is not made in Greece, that is from the dried fruit, but wine is often made from the fresh fruit. It produces a very luscious and strong wine, rather too sweet, however, for the general taste. Currants are also often mixed with grapes during the crushing, especially when the grapes are poor, as it is considered that they give strength and sweetness which would otherwise be wanting. Currant-growers, however, on the whole find it more to their advantage to dispose of their crops in the dried form. — PATRAS, *September 20, 1888.*

E. HANCOCK,
Consul.

CONCLUSIONS ADOPTED BY THE BELGIAN LABOR COMMISSION.

In April, 1886, a royal commission on labor was constituted in Belgium to examine into the condition of labor and make such recommendations as it might deem expedient. The following are its conclusions as recently published in volume 3 of its report. The translation has been made in the Department by Mr. Charles M. Caughy:

[Session of October 29, 1886.]

1. That there should be organized by royal decree for one or more industrial establishments a committee of arbitration, whose duty it should be to adjust all differences between employer and employé.

2. That all requests for arbitration should be made by the interested parties to the burgomaster of the commune. Within eight days after its receipt the communal council should decide upon the request and transmit its decision to the Government.

3. That the communal council, when it deems that the exigencies of the occasion demand it, may itself take the initiative step. In cases of trouble or strikes the burgomaster may address himself directly to the Government invoking the assistance of the board of arbitration, under reservation 94 of the communal laws. In such a case the Government itself may take the initiative step.

4. That the board of arbitration should be composed of delegates selected in equal numbers from the ranks of both employers and employés; that in case the delegates can not agree in the selection of a president, the board should be presided over by a justice of the peace, his deputy, or, in case of necessity, by some one delegated by him.

5. That the regulations of the board should determine the number of delegates, according to circumstances and the importance of the factories interested. It should also determine the classification of the delegates.

6. That the employers' delegates should be appointed by the proprietors of the establishment interested, and selected from actual customers, or from the directors, engineers, or accountants of said establishment. The delegates of the employés should be appointed from Belgian working-men, not less than twenty-five years of age, and they must have actually worked at their trade four years at least in one of the interested factories. To be an employés' delegate requires the same conditions as to be an elector.

7. That the board, when organized, should make by-laws; it may be convened by the burgomaster or the governor, and at the request of one-half the members, and may meet at any time. The sittings should be held with closed doors.

8. That the deliberations of the board should be signed by the president and by each member, and stamped with the seal of the justice of the peace.

9. That the board may, at the request of all parties interested, take upon itself the responsibility of appointing an arbitrator.

10. That the delegates should be appointed for a term of two years.

REGULATIONS REGARDING LABOR.

1. That in everything that relates to the limitation of working hours for adults, this section deprecates any interference upon the part of the legislator, with this exception, that when hygienic reasons exist the law must and shall protect the health of the working-man.

2. That the commission is pronouncedly in favor of the complete and absolute interdiction of women and young girls being allowed to work in the mines. As a temporary measure the commission thinks that no girl under the age of fourteen years should be admitted to them.

3. That no child under twelve years of age should be permitted to work in any mine, factory, or yard other than in agricultural industry, and it is left to the discretion of the legislator to decide in what cases this regulation is applicable. Children, however, between ten and twelve years may be employed a half day, except in the mines.

4. That a day's work for a child between twelve and fifteen years of age must not exceed thirteen hours, out of which two hours, at least, must be allowed for rest.

5. That working at night by women in mines, factories, or yards is forbidden.

6. That burgomasters may give, on their own responsibility, a memorandum-book to the father, mother, or guardian of any child working in any mine or industrial establishment of any kind, on which shall be noted the name and Christian name of the child, together with the date and place of birth. That the foremen (*chefs a'industrie*) or the proprietors should, on their part, keep a register, upon which should be entered the same facts, together with the date of the child's connection with the establishment, as well as the time when such connection should be severed. It would also be well to have posted in some conspicuous place in each factory the requirements of the law, and the royal edict touching that particular industry, as well as the by-laws of the establishment itself, should any exist.

7. That the standing of the sanitary police of the factories, especially of those who have in charge dangerous or unhealthy establishments, should be improved, and that it is particularly necessary that the local hygienic commission, which is now out of existence, should be re-organized. The inspectors in the discharge of their duties should be accompanied by a workman in order to avoid the divulging of any of the secrets of the factory.

8. That the inspectors should be selected, as far as possible, from officials of the present existing administration. It should be in the power of the Government, nevertheless, to select persons for this duty who seem particularly fitted to perform its requirements.

9. The extent of the penalty that should be given by the law has not been discussed.

HOMES FOR WORKING PEOPLE.

[Session of November 13, 1886.]

1. That it is necessary that a scientific statistical report be drawn up on the dwelling-places of the working people.

2. That it is necessary to inspect in a thorough and effectual manner the habitations of the working people, especially those which serve as dwelling-places for several families. The communal regulations should prescribe, for the construction and reconstruction of these houses, every condition that is indispensable to both health and morality.

3. That it is necessary to revise the law of 1822 on personal contribution (taxes) concerning the total or partial exemptions established in favor of working people's homes.

4. That it is necessary to encourage the erection of this class of houses in the country as well as in the city, and especially to urge those charitably inclined to invest part of their capital in constructing such buildings as will meet all the demands of hygiene as well as morality.

5. That the benefits granted by articles 1, 2, 4, and 5 of the law of August 12, 1862, which derogates in favor of associations having for their object the erection of houses and other buildings for the use of the working classes, are applicable to all constructors of such buildings, and particularly to public administrations, such as charitable institutions, asylums, and communal administrations, who employ in the construction of these houses a sinking fund, whether it be part of their inheritance or borrowed capital.

6. That it is necessary—

First. To look favorably upon those societies whose aim is to rent, erect, and, above all, to sell houses to working people, and allow them to issue stock.

Second. To exempt from the land tax for fifteen years any house sold to a working-man.

Third. To see that the communal administration grant to all who devote their attention to the erection of such houses exemption from the municipal tax (*frais de voirie*).*

Fourth. To prohibit the imposition of a provincial or communal tax upon any such houses which are exempt from government tax. Any house, the value of which does not exceed 3,000 francs, should enjoy this advantage.

*Money used for the acquisition of land through which streets are to be opened, the paving of the same, and building of drainage and water and gas conduits.

7. That societies having for their object the erection, purchase, sale, or rent of houses for the working people should be recognized as co-operative or limited corporations. The exemption from various duties granted in favor of co-operative societies by articles 1, 2, 3, and 4 of the law of July 2, 1875, also applies to limited corporations whose object is defined in article 1.

8. That it is necessary to exempt from execution (*droits de mutation*) any working-man who purchases a house of a less value than 3,000 francs from a building society or from any other public organization that is interested in that business, according to the conditions already defined.

9. That it is necessary to revise certain provisions of the civil code, in order to insure to the survivors of the husband the enjoyment of the house acquired during the married life of the deceased, and which, after his death, serves as the home of his heirs.

10. That it is necessary to revise articles 826, 827, 859, and 866 of the civil code ordering the division or the schedule of real estate and the sale thereof, when it is not divisible, there being in the entire inherited estate only one dwelling with appurtenances, the value of which does not exceed 3,000 francs.

11. That it is necessary in dividing the territory—

First. To reserve a portion of the land expropriated for the erection of houses for the working people.

Second. To erect upon the expropriated land a certain number of houses for the working people to replace the houses expropriated.

Third. To leave unoccupied by buildings a certain proportion of land, the amount to be determined by law.

PROFESSIONAL ASSOCIATIONS.

[Sessions of December 4 and 11, 1886.]

1. That each recognized professional union should be composed of citizens of Belgium, and that each union should contain only those of the same avocation. It may be composed of all employés, or of all employers, or of both, and should have for its object the education, the development, and the protection of their professional interests. The union may number among its members foreigners who have resided for at least two years in Belgium, on condition that their number shall never exceed one-tenth of the Belgian members, but they should never fill any executive position.

2. That the union should, in case of a dispute relative to labor, exert every effort for an equitable adjustment, if this will be permitted by the other party.

3. That its professional interests will concern exclusively: The board of arbitration; the labor exchange and all information on labor; the movements or the emigration of working people; assistance to those who are unemployed; the term of apprenticeship, technical education, library, expositions; questions relative to the conditions of labor, to the inspection and control of contracts, mines, factories, workshops, and the lodging-places of the working-man; to defend the working-man's interests in court of law; to secure aid in case of sickness, death or inability to work, either by organizing mutual aid societies or savings banks, or by direct appeal to the members, if the societies be in the same branch of the union; agricultural interests by inspecting and controlling all provisions, and purchasing all fertilizers and farming implements.

4. That a union organized on these principles should deposit a copy of its constitution and by-laws with the bureau of registry, which should be organized by the minister of agriculture and industry. This bureau will furnish a receipt thereof, which will guarantee the publication of the said constitution and by-laws within one month in a special issue of "Le Moniteur." Each union should select at the time of its organization some distinguishing title by which it shall be known.

5. That the professional unions shall have juridical individuality. No union can accept by free title (*à titre gratuit*) any thing except real estate and that which is necessary to furnish or improve the same. Other than what has just been mentioned they can not possess any thing except the contributions from membership.

6. That each union should annually furnish to the bureau of registration notice of every change or modification that is relevant to the constitution of the council. The register of the members should designate the nationality of each one. This register should be at the disposal of the minister and of the committee appointed by the King's advocate. All changes in the constitution, the nominations for members of the council, and a statement of financial standing should be published in a special issue of "Le Moniteur."

7. That the courts can, at the request of those interested and by desire of the ministry, declare as incompetent all unions which shall be organized or shall act in violation of the provisions of this law, and shall pronounce all their actions null and void. In case of false representation in the annual statement the directors of such a union may be prosecuted by due process of law. Any union which does not comply with the requirements prescribed in article 6 by March 31 of each year, for the preceding year, should be subject to a penalty of 25 francs for each month's delay. When such neglect has existed for six months the entry should be reported as prescribed in article 4.

8. That any member has the right, notwithstanding any clause, to resign at any time from a union, and said union can only claim from him the assessment past due and the current one. If he has made any deposits in the savings banks, he has the right either to continue his membership therein, or to receive for such deposits an amount to be determined by the courts.

9. That in case any union should be disbanded the liquidation of the indebtedness must conform to the law of 1873 relative to commercial unions.

METHODS OF REDUCING ALCOHOLISM.

[Sessions of December 11 and 18, 1886.]

1. That the tax on malt liquors be reduced, and in order to compensate for the reduction a sum at least equal to it be added to the tax on alcohol.

2. That the price of the license to sell alcoholic beverages be increased.

3. That in order to decrease the number of drinking-houses the commune proposes:

First. To forbid the issuing of new licenses.

Second. To decree the suppression (in case of death, failure, or retirement from business) of existing licenses.

Third. In order to protect private interests the present holder of a license is authorized to surrender it to the wife and children of a deceased dealer, and to allow by process of law to the highest bidders the re-opening of a portion of the drinking-houses which have been closed during the year.

4. That certain interdictions be provided — hawking, plurality of commerce, and selling liquor to persons less than sixteen years of age.

5. That the time of closing be fixed by law.

6. That no suit for the recovery of drinking debts be tenable in law.

7. That the Government officials be intrusted with the inspection of drinking-houses.

8. That fines be imposed upon every one found under the influence of liquor in any public place, and also upon any drinking-house keeper who sells liquor to any person already intoxicated or to any minor under sixteen years of age.

9. That bond be required of all drinking-house keepers. This bond will serve as a guaranty for the payment of liquor taxes, as well as for the fines or damages which will accrue, either from the actions of the keeper of the house himself or from those of the persons who have become intoxicated in his house.

10. That the sale of alcoholic beverages on credit be prohibited.

11. That the Government should use every known means in its power to suppress intemperance. The Government, with this aim in view, particularly advises the formation of temperance societies.

TECHNICAL SCHOOLS.

[Session of February 5, 1887.]

1. It is necessary for the public good to encourage the establishment of technical schools, by adding to the curriculum of academies and industrial schools courses of art and applied science. This instruction should tend in a practical direction. Those private institutions which take the initiative for the creation of technical schools should be encouraged by the public authorities, particularly if they meet all the requirements of public inspection.

2. The cultivation of manual skill should be commenced in the primary school. The theoretical application of science to industry should be taught in the industrial school. The theoretical application of drawing and modeling to industry should be taught in the decorative art schools. Apprenticeship should be served in the workshops or in schools founded by the proprietors or syndicates, which should be closely connected with the workshops.

3. It should be the duty of the state to confine itself to the maintenance of harmony, and a grade between the different schools of technical education, and to encourage them by subsidies, respecting, as far as possible, the first step taken by the group who founded them.

4. The communes can greatly aid professional education by —

First. Introducing manual exercises in the primary schools.

Second. By establishing schools of modeling and design.

Third. By encouraging their progress by granting locations to the professional syndicates.

5. The state and the communes should place the schools under the following restrictions:

First. A minimum age for admission to an apprenticeship.

Second. The minimum education, to be determined by examination, that an applicant for apprenticeship must possess. This minimum should comprehend a thorough knowledge of reading, writing, and the four fundamental rules of arithmetic.

6. The Government should encourage the establishment of a more advanced curriculum for adults, in which should be included a theoretical education adequate to the requirements of those who would apply themselves to the higher mechanical arts.

7. The Government is requested to extend to children of working people who attend a technical school the privilege of the low tariff on the railroads as allowed to the working classes.

PAYMENT OF SALARIES.

[Session of November 27, 1886.]

1. That every contract for labor which stipulates either directly or indirectly a method of paying the salary which is other than in current money should be null and void. Every contract that has for its object the spending of the working-man's salary in a specific manner should be null and void.

2. That the payment of all or of any portion of a salary otherwise than in current money should be null and void. The working-man should by due process of law recover all or any part of his salary which had not been paid to him in current money.

3. That the action of any proprietor for the recovery of indebtedness for merchandise furnished to any working-man should not be tenable.

4. That any proprietor convicted of having used undue pressure to make a working-man purchase of, or prohibit him from purchasing of, any specific establishment should be amenable to the penalties prescribed in article 9 of the present law.

5. That if any foreman or fellow-workman in the mine, the factory, or the yard, or any contractor or subcontractor has sold goods to any workman in the same shop, factory, or yard, an action for the recovery of the indebtedness by the said foreman, fellow-workman, contractor, or subcontractor should not be tenable.

6. That no reduction not specified in the contract should be made in the salary.

7. That the proprietor should be compelled to pay his employés at least twice during each current month at fourteen, fifteen, or sixteen days interval. The first payment in the month should be made as on account, but must represent at least 75 per cent. of the accrued salary for the first fifteen days.

8. That it should be forbidden for any proprietor to pay wages in any drinking-shop, store, or factory, or in any place connected with such establishments. Any person who should violate this order should be liable to the penalty provided by the present law.

9. That every person violating the present law should be subjected to a fine of from 100 to 500 francs for the first infraction, and for each repetition of the offense a fine of from 500 to 1,000 francs should be imposed.

10. That the present law should not affect either farm hands or house servants.

11. That it should be the duty of every proprietor to see that the present law shall be and must remain displayed in every factory, and particularly in the office where the wages are paid.

SAVINGS-BANKS.

[Session of November 27, 1886.]

1. That the commission of labor should by every means in its power insist that the directors of every corporation, proprietors and foremen of factories, the presidents of provident and mutual aid societies, the managers of charitable institutions (*patronages*) and other organizations which have for their object both the physical and moral advancement of the laboring classes should establish among these classes an agency which would encourage thrift, by receiving from them on every pay-day sums, no matter how small, which should be placed to their credit in the savings-bank. To accomplish this end the commission suggests the formation of soliciting committees, whose duties should be confined to a certain territory, a single canton for example.

2. That it would suggest to managers of provident savings-banks:

(*a*) To place at the disposal of the directors or presidents of these institutions account-books of the same style as those distributed by the national banks, with the exception that they bear no official signature nor number, and that they have a cover peculiar to themselves.

(*b*) To have printed on these account-books the lowest possible rate of interest, and to guarantee to credit once every year upon each book as presented the amount of interest that has accrued to the holder.

(*c*) To furnish to each society demanding it one of these books numbered, on which shall be entered *les sommes globales* of the different deposits upon the unnumbered books.

(*d*) To furnish a register upon which the directors shall enter the name and amount of deposit of every one interested in these savings-banks.

3. That the commission suggests to the Government and to the managers of the savings-banks that they establish either triennial or quinquennial conventions, to reward by classes the associations which are formed, with a view of protecting the savings of the working people.

MUTUAL AID SOCIETIES.

It is necessary—

First. To organize in every arrondissement one or more executive committees for the formation and development of mutual aid and provident societies, and comprehend in them all working people who are members of mutual aid societies, whether recognized or not.

Second. To request the communes to furnish a convenient location for the holding of meetings, as well as all necessary furniture.

Third. To encourage every publication which has for its object the development of the principles of friendship, economy, and temperance, particularly when the publication is in the shape of a tract.

Fourth. To make untransferable and to place beyond the reach of seizure the interests of every member in a mutual aid society.

Fifth. To modify as follows the third section of article 3 of the law of April 3, 1851: That the society shall be empowered to accept either as a donation or a legacy the furniture as well as the property used for its meetings according to the requirements of the form prescribed by section 3 of article 76 of the communal law.

Sixth. To rescind article 8 of the law of April 3, 1851, which empowers the burgomaster or his deputy to assist at the sessions of recognized societies.

Seventh. To submit for the approval of the chambers the royal decree issued December 2, 1874, especially that portion which relates to the conditions required to approve the statutes, the forms and conditions of dissolution, and the methods of liquidating the affairs of a mutual aid society; to modify section 5 of article 6 of the law of 1851 so far as to give the members of the society at least a partial ownership in the property of the society.

Eighth. To ask the permanent commission to give the most vigilant attention to the statistics of the society, so as to place them by means of clear and precise investigation upon a scientific basis.

Ninth. To suggest that the Government give its attention to the best methods of enhancing the shares of the mutual aid societies in the savings-banks, and to persuade the givers and the communes to offer as prizes in the schools, savings-bank books to popularize the banks.

Tenth. To recommend in the most pleasing manner to the foremen (*chefs d'industrie*) their affiliation with the mutual aid societies by becoming enrolled as honorary members.

Eleventh. To exempt from the postal tax all printed matter of a legally-recognized society.

CONVENTIONS OF EXPERTS.

[Session of April 25, 1887.]

1. The commission expresses a great desire to see revised, articles 2, 3, 4, 8, 13, 29, 38, 41, 46, and 83 of the law of February 7, 1859, in reference to the conventions of experts, with a view of—

First. Authorizing the establishment of these conventions by royal decree.

Second. Rendering compulsory the registration of the business of all electors, whether they be working-men or proprietors, meeting under the conditions prescribed by article 6 of the law: Every person who shall be unduly registered, omitted, or erased from the register, should have the right of redress before the justice of the peace.

Third. Suppressing the fifth section of article 6, as well as article 7, which treats of the ability of the members to read and write, and the reunion of the privileged classes.

Fourth. Selecting from their own branch of the council the president and vice-president.

Fifth. Organizing conventions of experts for each permanent industry, to unite the lesser industries, and consequently reduce the large figure of sixteen members, or, much better, let the convention of experts be composed of a sufficient number of members to enable a subdivision of committees to be made representing the industries of like class. The royal decree can decide if elections shall be held by classes.

Sixth. Extending the jurisdiction of the convention of experts to affairs which relate to pensions and aid rendered by the provident savings-banks.

Seventh. Refusing the admission of more than one member of any firm as a delegate to the convention of experts.

Eighth. Abolishing the right of appeal from any of the decisions, no matter what may be the complexion of the convention.

Ninth. Simplifying as much as possible the forms and decreasing the expenses, so that the cost will be as small as possible for both proprietors and working people.

2. The foremen, or *porions*, will be electors as working people, but will be eligible only as proprietors.

3. It is requisite that the greatest publicity be given to all announcements relative to the election for members of the convention.

4. It is requisite that the secrecy of the vote be maintained.

5. Every proprietor or working-man who complies with the conditions set forth by articles 4 and 6 of the law, and who does not fall under the ban of the offenses set forth in article 11, shall receive an elector's card, by the authority of which, and without other formality, he can exercise all his rights at any election which shall take place within his jurisdiction until the 31st day of March of the following year.

SCHOOLS OF DOMESTIC ECONOMY.

[Session of April 25, 1887.]

1. It is highly necessary that the state, the provinces, and the communes should each appropriate certain amounts for the establishment and maintenance of schools of domestic economy.

2. The Government will suggest to the communes the advisability of annexing to their communal or district schools a branch wherein domestic economy will be taught. In this case the branch should be equipped with a special corps of teachers.

3 and 4. (Special regulation of no general interest.)

HOMES FOR WORKING PEOPLE.

[Session of April 25, 1887.]

Conclusions modifying those already adopted at the session of November 13:

1. That it is necessary to prepare a scientific statistical statement of the homes of working people. The commission of labor expresses the hope that in the prosecution of this investigation the superior council of public health will be called upon to furnish the data, even approximately, as to the number of families in each house, and the separation of children from adults, as well as the separation of the sexes during the hours of sleep.

2. That it is necessary to give legislative recognition to the powers of the communal, to—

First. Issue prescribed regulations for the building of these houses in order that they shall possess those requirements so indispensable to both morality and health.

Second. Maintain, in the interests of sanitation, a continuous and effective inspection of these houses, especially of those which are occupied by several families. The hallways, yards, and stairways which lead to separately-rented apartments should be regarded by the police as public thoroughfares, and should be inspected accordingly.

3. That it is necessary, pending a more complete revision of the law of 1822, which relates to personal contribution, to modify the sections of that law which treat of the total or partial exemptions established in favor of houses of a greater rental value and excluding from the same benefits the homes of clerks and drinking-houses.

4. That it is necessary that public administrations should employ a portion of their capital in constructing comfortable dwelling-houses and rent them at such prices that after all expenses are paid, except the interest, the residue should be a fair return for the capital invested in the enterprise. The establishment of cabarets should be prohibited. To encourage the tenants to keep their apartments cleanly and in good order, it should be stipulated that the net proceeds of the rental, less, of course, the interest due upon the capital invested, should be divided annually among the occupants by crediting it against the next month's rent.

5. That it is necessary that the benefits granted by articles 1, 2, 4, and 5 of the law of August 12, which derogates in favor of societies that have for their object the erection of houses and other buildings intended for the working people according to their rights under the laws of registration and transcription, should be also applicable to every builder of such houses, and especially to public administrations, such as beneficial associations, asylums, and communal administrations, who employ in their construction a sinking fund, whether it be in the shape of a legacy or borrowed capital.

6. That it is necessary—

First. To encourage those associations which have for their exclusive object the construction, renting, and particularly the sale of this class of houses to working people, by authorizing them to issue their stock at a premium.

Second. To exempt from the land tax for fifteen years all newly-constructed houses, the cost of which, not including the land, does not exceed 1,600 francs. In the event of the sale of one of these dwellings, if the purchaser is possessed of no other real estate, and if the purchase money is to be paid as an annuity, the exemption from the land tax shall be granted for fifteen years to be dated from the day the sale was consummated.

Third. To prevail upon the communal administrations to exempt from the municipal tax (*frais de voirie*) all companies or societies who devote their capital to the erection of this class of houses.

Fourth. To forbid the provinces and communes to levy any tax upon houses which have been exempted from the land tax.

Fifth. Not to increase either the land tax or the provincial or communal taxes upon present existing buildings after they have been cleansed and improved, provided their value does not exceed 1,600 francs, land not included.

7. That societies having for their object the erection, purchase, sale, or rental of houses for the working people should be recognized as co-operative or limited corporations. The exemption from various duties granted in favor of co-operative societies by articles 1, 2, 3, and 4 of the law of July 2, 1875, also applies to limited corporations whose object is defined in article 1.

8. That it is necessary to exempt from execution (*droits de mutation*) any working-man who purchases a house of a less value than 1,600 francs, land not included.

9. That it is necessary to revise certain provisions of the civil code in order to insure to the survivors of the husband the enjoyment of the house acquired during the married life of the deceased, and which, after his death, serves as the home of his heirs.

10. That it is necessary to revise articles 826, 827, 859, and 869 of the civil code, ordering the division or the schedule of real estate and the sale thereof when it is not divisible, there being in the entire inherited estate only one dwelling with appurtenances, the value of which does not exceed 1,600 francs, the land not included.

INSURANCE AGAINST ACCIDENT.

[Session of May 20, 1887.]

1. In order to establish the insurance upon a scientific basis, it will be necessary to prepare a statistical account of the number of employés of each trade, and the average number of accidents in that particular branch.

2. It would be only just to compel every proprietor to announce, through a method yet to be determined upon, every accident sustained in his establishment.

3. That damages to be paid on account of an accident should be regulated in the most stringent manner by the law. The injured party should be at liberty to decide upon the mode of indemnity.

4. Every working-man should be insured.

5. The insurance should cover all risks incidental to his occupation.

6. The law should give its attention consecutively to the salaried workmen belonging to the different branches of manual labor.

7. The employés who may become insured should be those who receive an annual salary of not less than 2,500 francs; foremen are included under this rule.

8. The law should decide who shall be the persons to whom, in case of death, the insurance money should be given, as well as the proportion thereof that each one should receive.

9. The salary of the five previous years and the age of the injured man should be the ground upon which to base the amount of indemnity.

10. In order to assist the working-man in proving his claim, the law should make it obligatory upon the proprietor to keep a book in which the amount of wages paid to each man be entered.

11. An accident occurring through the gross carelessness of the injured party himself is not subject to indemnity.

12. The working-man can be insured by the proprietor.

13. The premium may be paid by the proprietor to the insurance company. It will be rated according to the risks attending his occupation, and by the standing of the factory in which he is employed.

14. The premium will be sufficient to furnish the capital of the pensions granted.

15. The insurance company should be a syndicate formed from factories of the same or similar industry, and their operations should be controlled by the state.

16. The syndicates should be managed by a committee composed of proprietors and employés in equal numbers, with a president, who should belong to neither interest.

17. The insurer should guarantee the insured according to the amount of premium paid.

18. The labor commission requests the Government to submit the questions of right on the responsibility for accidents to the commission appointed to revise the civil code. It trusts that this commission will render a prompt report on the questions submitted to it.

MUTUAL AID, PROVIDENT, AND PENSION SOCIETIES IN THE INTEREST OF FACTORY EMPLOYÉS.

A.—Mutual aid societies.

[Sessions of May 28 and June 4, 1887.]

1. Each proprietor of any work, whether it be permanent or of a temporary duration of three months at least, who is bound by the law to see that his employés are insured or is connected in any manner with the communal provident societies in favor of minor working-men, should provide:

For the wounded.—(*a*) Means to summon immediately to their aid both surgical and medical assistance (in this medicine is included). (*b*) Means by which they may be afforded both pecuniary and sanitary aid.

For the sick.—(*a*) Means to provide medical attention not only for the working-man himself, but also for any of his family who reside in the same house. A working-man whose sickness has been brought about by his own imprudence, or by continual intemperance, may be deprived of this assistance. (*b*) Means by which to allow to the sick working-man, as a direct result of his labors in the factory, all indispensable assistance of a pecuniary or medicinal nature.

2. The proprietor shonld have recourse to every available means for assuring himself of the responsibility of this organization.

3. Those particular mutual aid societies which are supported or created by reason of article 1 should be maintained by a rebate on the wages, by contributions of the proprietors by subsidies and various bequests, as well as by the result of the fines incurred for infractions of any regulation of the establishment or workshop. At all events, the contributions of the proprietors should be ample to defray all the medical and surgical expenses (including the medicine) of the injured working people.

4. These societies may be especially intended for the injured and sick, or they may be thrown open to all classes. They may also be open to several industries carried on in the same or neighboring localities.

5. Any working-man interested in any mutual aid society may, if he so desire it, be exempted from contributing to that particular society. In such an event he should not be entitled to any of the benefits of the institution except the right to free surgical attendance.

6. The administration of these societies should be intrusted to the delegates of the working-men; the method of electing whom, and all requirements for eligibility, should be determined by the statutes. Among those requirements should be that for a certain number of years (to be determined hereafter) the applicant has been in the continuous employ of the same proprietor or in the same workshop. The proprietor may have himself represented in the executive board and demand of it the presidency, with the right to vote. In every new establishment the executive board may be selected by the proprietor for the first three meetings.

The length of time which each individual mutual aid society is obliged to contribute to any injured member should be three months from the date of the accident.

8. Every possible notoriety should be given as regards the financial standing of any society, particularly by sending to each working-man a tabulated statement of the proceedings of the previous meeting.

9. Individual mutual aid societies should be recognized under conditions to be determined by law. These should prescribe the method of liquidation for the recognized as well as for the unrecognized societies.

10. The Government may compel those industrial institutions who receive any support from the state to establish recognized mutual aid societies.

B.— Provident society for miners.

1. The provident societies for miners should be maintained; but they should be released from all past or present affiliation with pensions for old age.

2. The rates of other pensions should be made to harmonize with those of insurance against accident while at work.

3. The working-men should contribute to the support of the society.

4. When an establishment has made for its pensioners a sum larger than the amount of rebate held back from the wages and the subsidy, then it should pay 50 per cent. of the excess into a fund to be known as the extraordinary subsidy.

5. The amount of the payments should depend entirely upon the class in which the various mining associations have been graded.

6. Provident societies should be permitted to receive support both from the Government and the province.

7. Each society should be managed by a commission, to be composed of proprietors and employés, in equal numbers, and presided over by an official of the state.

8. Each society should have a clause in its constitution which would permit any working-man to transfer his membership to any other society.

9. The commission is satisfied that the following clauses should by all means be adopted:

(*a*) That a working-man should be permitted by the commission to be represented before it by a physician of his own choice.

(*b*) That he should have the right of appeal to the convention of experts.

(*c*) That there should be compulsory affiliation between all miners and mining associations.

(*d*) That the term of existence of any society should be unlimited.

(*e*) That the decisions of the commission upon all matters appertaining to pensions should be so clearly and distinctly set forth that in case of the rejection of his claim the working-man can readily advise himself of the reasons thereof.

(*f*) That the greatest publicity should be given to the financial standing of every society.

C.— Pension societies.

1. All working-men belonging to permanent organizations which derive assistance from the state should be affiliated by name with the general pension society, or with some analagous institution which has been specially organized in their interest. They should be given credit in the pension rates for a risk against accidental death.

2. As a result of this affiliation the proprietor would pay over to the credit of the working-man a certain number of centimes to be determined by the amount of work done daily. To this payment may be added an interest in the subsidies of the state, and the allowance made by the province. A portion of this payment should be made with regard to the capital at the death of the person insured.

3. The age at which a working-man shall be entitled to a pension should be decided by the trade which the applicant follows.

4. This affiliation of the working people with the pension society will be most sensibly felt only in the future, the pensions of old miners remaining provisionally in the custody of the president of societies now existing. This latter institution should occasionally be assisted by a portion of the resources which are really intended for the pension societies.

5. The attention of the Government is called to the article submitted by Canon Henry relative to the most practical means of improving and popularizing the pension societies.

CO-OPERATIVE SOCIETIES.

[Session of June 4, 1887.]

1. The law of May 18, 1873, section 6, relating to co-operative societies, is sufficient.

2. The law of June 20, 1867, which, in article 1, authorizes the Government to confer all the rights of a limited society upon societies which have for their object the erection, purchase, sale, or rental of houses intended for working people should be completed. It accorded to such societies as requested it, the rights and benefits granted to co-operative societies by the laws of May 18, 1873, and July 2, 1875.

3. It is necessary that the attention of the legislators and the Government be called to the great service that has been rendered to agricultural credit by the establishment and encouragement given to societies which are conducted in the interest of the farming element.

4. The commission particularly recommends co-operative societies of consumption, of popular credit, and those for the construction of houses for working people. It indorses those consumers' co-operative societies which deal with the merchants and the trades-people in their own vicinity. It expresses the desire that there will be organized a permanent commission of the co-operative societies similar to those established by the mutual aid societies, the aim of which will be to direct the members and keep together the statistical accounts.

5. In manufacturing establishments where the working people have organized from among themselves a consumers' co-operative association the proprietors should be empowered to withhold from the wages of any working-man the amount that he is indebted to the said association.

6. By an extension of the provisions contained in articles 85 and 86 of the law of May 18, 1873, co-operative societies should be permitted to amalgamate so as to form another independent co-operative society from all the societies which, notwithstanding, shall preserve their juridical individuality.

7. The co-operative societies which have for their object the purchase of raw material, provisions, and tools intended for the consumption or use of their members may be organized under the form prescribed by the law of 1873, but even then their transactions should not be regarded as commercial, according to the terms of articles 2 and 3 of the commercial code.

EXPORTS FROM MOROCCO TO THE UNITED STATES.

Articles.	Quarter ending—				Total for the year.
	September 30, 1887.	December 31, 1887.	March 31, 1888.	June 30, 1888.	
Almonds	.....	$918.37	.....	.....	$918.37
Carpets and curios	.....	75.20	$131.00	.....	206.20
Cushions	.....	.....	2.40	.....	2.40
Dates	.....	.....	8.00	.....	8.00
Hides	.....	84.00	.....	.....	84.00
Skins, goat	$7,394.50	32,076.87	23,279.00	$48,995.89	111,746.26
Skins, sheep	.....	673.66	.....	.....	673.66
Wool, greasy	261.00	95.00	.....	.....	356.00
Wool, washed	.....	38.89	.....	.....	38.89
Walnuts	.....	241.02	.....	.....	241.02
Total	7,655.50	34,203.01	23,420.40	48,995.89	114,274.80

WM. REED LEWIS,
Consul.

PORTO RICO.

Consul Conroy (San Juan, Porto Rico,) reports that "financially the island continued during 1887 in the same embarrassed position, and no alteration has taken place in the existing currency—the Mexican silver dollar. The project for exchanging it for Spanish colonial coin is still pending. Exchange has ruled about the same as last year; bills on the United States were at 20 to 28 per cent. premium, and on London $5.70 to $6. A bank is to be established here, with the sanction of the Government, having the privilege of issuing paper money. The concession for constructing a railroad around the island has been granted to a party in Barcelona, Spain, who has formed a company with French capital and sent several engineers to make the surveys. The road may be completed in several years."

The exports from Porto Rico to the United States during the year ending June 30, 1888, were as follows:

Statement showing the trade between the Island of Porto Rico and the United States for the fiscal year ending June 30, 1888.

Exports.	Value.
Sugar	$3,693,495.52
Coffee	86,742.48
Molasses	651,037.89
Tobacco	68,150.62
Wood	1,827.48
Hides	2[illegible],212.25
Rum	554.72
Cocoa-nuts	27,885.10
Annotto	4,769.76
Coarse salt	26,250.00
Tallow	2,294.10
Oranges	20,653.87
Pine-apples	5,625.60
Raw cotton	1,245.75
Ginger	295.23
Total	4,611,040.37

Exports from Aguadilla (Porto Rico) to the United States.

Years.	Sugar.	Coffee.	Tobacco.	Molasses.
	Quintals.	*Quintals.*	*Quintals.*	
1880	90,083	38,400	10,232	78,500
1881	57,552	68,000	6,231	15,960
1882	86,722	34,400	5,665	35,786
1883	110,279	52,800	9,315	26,290
1884	134,000	31,200	3,445	67,395
1885	137,663	60,000	8,950	43,646
1886	40,000	43,500	2,332	1,608
1887	35,475	35,545	8,096	15,275
1888	68,945	49,230	8,975	8,075

INDUSTRIES AND NAVIGATION OF NANTES.

SHIP-BUILDING.—*Vessels launched during the year.*

Name.	Character.	Tonnage.	Horse-power.	Remarks.
The Buffalo	Iron screw	333	600	For the French Government.
Twelve iron	Torpedoes	900	6,300	Do.
The Hurricane	Iron screw	160	1,600	Do.
Side-wheel	Iron ferry-boat	158	180	For the Company of the Basse Loire.
Steamer	Iron screw	60	70	Do.
Steam-dredge	Wood	148	25	Private account.
Steamer	Iron screw	140	150	French colonies.
The Fanny	Three-masts, wood	400		Private account.
Twenty small vessels	Wood and iron	885		Do.

This table shows an increase of 794 tons over the preceding year 1886; but this increase is mainly owing to the construction of canal boats for the canal maritime, now in process of construction, from the port of St. Nazaire to the city of Nantes.

To quote from the report of the Company Chantiers de la Loire:

The condition of the ship-building industry of the Loire Inférieure, as regards this company in particular, may be characterized in the following manner—the usual activity in the construction of vessels of war, but absolutely no orders for vessels of commerce. During the year 1887 the company delivered the following ships, begun in the dock-yard the preceding year, viz: The *Drome*, transport of the third class, for the French Government; the *Buffalo*, tug, for the same; the *Constantia*, tug, for Roumania; the *Hurricane*, torpedo, constructed on a plan suggested by the company and sent to Toulon to be tested. They also delivered 12 torpedo boats, 35 meters in length, a dredge, iron barges for the colonies, lighted buoys for the Suez Canal, etc. Work was continued on the cruisers *Tage*, for the French Government, and the *Admiral Kornelow*, for Russia. An order has been received for an iron-clad cruiser for Greece, and from the Company Chargeurs Réunies, of Havre, for a passenger and freight steamer. This is the only commercial vessel ordered in France during the year.

Vessels belonging to the ports of the Loire, January 1, 1888.

Tonnage.	Port of Nantes.		Port of St. Nazaire.	
	Number.	Tonnage.	Number.	Tonnage.
800 tons and over	7	7,194	9	17,644
From 700 to 800 tons				
From 600 to 700 tons	6	3,913	1	609
From 500 to 600 tons	5	2,710	5	2,803
From 400 to 500 tons	15	6,885	6	2,487
From 300 to 400 tons	27	9,540	6	2,123
From 200 to 300 tons	38	9,228	1	216
From 100 to 200 tons	89	12,658	1	101
Under 100 tons	158	6,435	69	1,949
	345	58,563	98	27,932
From St. Nazaire	98	27,932		
Tota. both ports	443	86,495		

The preceding table shows a decrease of 27 vessels, 8,527 tons, as compared with the year 1886. This decrease is entirely at the port of Nantes.

Government works.

Eight miles below the city of Nantes, on a small island three-fourths of a mile in length and one-fifth in width, on the south side of the river Loire, are constructed the extensive machine shops and foundry of the French Government. The buildings cover the greater part of the island and are admirably adapted for the purposes for which they were constructed. The arrangements for light and ventilation are excellent. Engines and machinery for the navy are constructed at these works. Eleven hundred men are employed, are cared for during illness, and, after twenty-five years service, receive a pension of 600 francs per annum. The wages paid per day are as follows: Ordinary workmen, new hands, 3 francs (60 cents); old hands, 4 francs (80 cents); skilled workmen, 5 to 5.50 francs ($1 to $1.10).

IRON WORKS OF THE BASSE INDRE.

The products treated during the year amounted to 7,783 tons, against 7,401 in 1886, an increase of 382 tons; average number of workmen employed, 450.

The foundry at Coueron produced during the year in raw products 19,561,732 kilograms, against 16,187,077 in 1886, as follows, viz:

	Kilograms.
Lead ore, treated	9,126,811
Lead ore, refined and unsolvered	8,765,856
Copper ingots	1,129,020
Zinc, refined	530,045

In refined products, during the year, 18,566,330 kilograms, against 17,131,851 kilograms in 1886, as follows, viz:

	Kilograms.		Kilograms.
Pig-lead	12,024,076	Sheet copper	918,864
Silver ingots	19,348	Copper wire	37,338
Red-lead	381,792	Copper bars	72,176
White-lead	71,412	Sheet brass	1,024,831
Shot	939,960	Brass wire	307,786
Lead pipe	1,378,154	Brass bars	118,099
Sheet lead	1,269,418	Sheet zinc	3,076

Number of workmen employed during the year, 580.

MANUFACTURES OF WOOL AND COTTON.

These industries show a continued falling-off, and from having been formerly important branches of business in Nantes have dwindled to almost nothing. This is owing to the increasing introduction of foreign goods and the competition of the manufactures of Normandy and the North.

MANUFACTURES OF OILS AND SOAP.

The oil factory of Chantenay has used in the manufacture of oils the following quantity of oleaginous articles employed for this purpose:

	Kilograms.
Cocoa-nut	1,200,000
Sesame	460,000
Arachides (pea-nuts)	550,000

The oil produced is mainly used in the manufacture of soaps. Quantity produced during the year:

	Kilograms.
Castile soap	2,400,000
Other soaps	1,100,000

Oil cake has had an active sale during the year at advanced prices.

CONSERVES ALIMENTAIRES.

The yield of vegetables for canning has in general been good as regards quantity, except the crop of peas, which was injured by drought at the moment when the growth was the most active. The sardine fishing on the coast of Morbihan and Finistère has been more prosperous than for many previous years. Never before on these coasts has such an abundance of this fish been seen. The fishing season, favored by summer weather, continued all the month of October without a day's interruption. During this time the quantity caught was equal to the five previous months. On the coasts of La Vendée, the Loire Inférieure, and all those places where dredging was necessary, very few shoals of sardines were seen. The result for the year 1887 was satisfactory to the manufacturers as well as the fishermen.

SALT.

The yield of salt from the marshes on the coast for the year 1887 amounted to 60,384,680 kilograms. Although this is double the quantity produced in 1886, it is but a low figure compared with the year 1884, when the yield was 113,000,000 kilograms.

CORDAGES OF HEMP, MANILA, IRON, ETC.

This industry has received some encouragement during the year from the ship-yards of Nantes and St. Nazaire and from the colonies.

	Kilograms.
Ropes of tarred hemp	400,000
Ropes of hemp, not tarred	20,000
Ropes of galvanized iron	70,000
Ropes of galvanized steel	10,000
Copper lightning-rods	1,500
Ropes of cotton-cocoa, etc	10,000
Ropes of manila	60,000

NAVIGATION.

Arrivals and departures of vessels of all nations from the ports of the Loire in 1887.

Arrivals.	Number.	Tonnage.	Departures.	Number.	Tonnage.
Loaded	2,426	748,787	Loaded	1,767	313,835
In ballast	456	52,536	In ballast	1,078	415,965
Total	2,882	801,323	Total	2,845	729,800

The following is a statement of the commerce of the ports of the Loire with foreign countries—both arrivals and departures loaded:

Nantes, Paimbœuf, and St. Nazaire.	French vessels.		Foreign vessels.	
	Vessels.	Tonnage.	Vessels.	Tonnage.
Arrivals:				
From the French colonies	67	32,486	21	9,304
Countries outside of Europe	35	67,151	37	36,863
Countries of Europe	356	152,358	545	289,328
From cod-fish fisheries	4	294	.....	.....
Total	462	252,289	603	335,495
Departures:				
To French colonies	56	22,478	2	732
Countries outside of Europe	41	68,954	2	867
Countries of Europe	199	55,682	152	52,355
Total	296	147,114	156	53,954

Commerce of the ports of the Loire for the past three years.

Ports.	Years.	French vessels.		Foreign vessels.		Total.	
		Vessels.	Tonnage.	Vessels.	Tonnage.	Vessels.	Tonnage.
Arrivals:							
Nantes	1887	462	252,289	603	335,495	1,065	587,784
St. Nazaire	1886	510	206,092	673	350,008	1,083	618,100
Paimbœuf	1885	589	280,766	723	373,747	1,312	654,483
Departures:							
Nantes	1887	302	147,114	156	53,954	458	201,068
St. Nazaire	1886	312	150,044	192	58,396	504	208,440
Paimbœuf	1885	348	117,926	213	61,615	461	179,541

From these tables it will be seen that among the arrivals the French flag has suffered a diminution of 16,000 tons, which bears mainly upon the commerce with the countries of Europe. The trade with the French colonies has increased about 7,000 tons. Foreign flags have lost among the arrivals about 15,000 tons—a loss caused entirely by the decrease of the commerce with European countries—trade having increased about 5,000 tons with the French colonies and 3,000 tons with countries outside of Europe. In departures may be noticed a small decrease of 2,000 tons, to the detriment of the French flag, and a decrease of about 4,500 tons affecting foreign flags.

Navigation between the ports of the Loire and the French colonies.

Ports.	French ve[illegible]		Foreign vessels.	
	Number.	Tonnage.	Number.	Tonnage.
Arrivals:				
From Réunion	9	3,736	1	417
From Guiana	1	367	.....	.....
From Martinique	16	8,334	4	1,213
From Guadeloupe	21	6,750	11	4,081
From Mayotte	4	1,866	3	2,553
From Algeria	16	11,433	2	1,038
Total	67	32,486	21	9,304
Arrivals in ballast	1	432	.....	.....
Total	68	32,918	21	9,304
Departures:				
To Réunion	9	4,314	.....	.....
To Guiana	15	6,811	.....	.....
To Martinique	10	3,033	.....	.....
To Guadeloupe	16	4,516	1	235
To Mayotte	2	845	.....	.....
To Algeria	1	858	1	497
To Senegal	1	486	.....	.....
To Gaboon	1	591	.....	.....
To New Caledonia	1	1,024	.....	.....
Total	56	22,478	2	732
Departures in ballast	6	2,621	.....	.....
Total	62	25,099	2	732

Arrivals, loaded, from the countries outside of Europe, exclusive of the colonies.

From—	French ships.		Foreign vessels.		
	Number.	Tonnage.	Nationality.	Number.	Tonnage.
Egypt	.....	.....	England	1	888
British India	.....	.....	do	3	3,582
Holland	.....	.....	Norway	1	811
	.....	.....	Germany	2	1,623
	.....	.....	Sweden	1	516
The Oceanic Isles	.....	.....	Denmark	1	190
	.....	.....	Germany	1	288
British possessions in N. A.	.....	.....	Norway	2	898
United States	1	1,977	England	14	19,734
	.....	.....	Greece	1	595
	.....	.....	Germany	1	1,281
	.....	.....	Norway	1	605
St. Thomas	1	1,765	.....	.....	.....
Brazil	8	2,467	England	4	4,064
	.....	.....	Norway	1	199
Argentine Republic	.....	.....	England	1	908
	.....	.....	Italy	1	411
	.....	.....	Norway	1	270
Vera Cruz	12	26,274	Transatlantic steamers	.....	.....
Colon	13	34,678	do	.....	.....
Total	35	67,151	.....	.....	.....
Foreign vessels	37	36,863	.....	.....	.....
Total	72	104,014	Total	37	36,863

Compared with the preceding year, there is a marked improvement in the trade with the French colonies. The importations (sugar, coffee, cocoa, rice, etc.) show an increase of 7,000 tons in French ships and 5,000 tons in foreign vessels. This increase is mainly from Algeria and Martinique. On the other hand there is a decrease of 3,000 tons in the imports from Réunion.

Forty French vessels of 61,051 tons arrived in 1886, and forty foreign vessels of 33,584 tons. This shows a decrease in the number of vessels and an increase in tonnage, which increase is owing entirely to the establishment of regular lines of large transatlantic steamers to Vera Cruz and Colon.

Navigation of the ports of the Loire with the ports of Europe in 1887.

Countries.	French vessels.		Foreign vessels.	
	Number.	Tonnage.	Number.	Tonnage.
Arrivals of vessels loaded coming from—				
England	270	129,776	359	241,283
Belgium	5	980	20	8,653
Sweden	3	1,816	46	19,316
Norway	2	414	28	7,734
Russia	2	486	14	6,734
Northern Germany	1	107	34	12,090
Denmark	.....	.....	1	244
Spain	55	14,738	23	11,783
Portugal	12	2,591	4	352
Italy	4	768	7	3,149
Austria	.....	.....	2	654
Turkey	2	682	7	3,336
Total	356	152,358	545	289,328
Arrivals in ballast	17	6,634	4	1,018
Total arrivals	373	158,992	549	290,346
Departures of vessels loaded going to—				
England	159	47,104	100	31,451
Belgium	8	1,554	28	10,921
Northern Germany	4	707	.....	.....
Denmark	1	191	3	865
Spain	21	4,995	17	7,607
Portugal	2	165	.....	.....
Italy	2	331	1	389
Turkey	2	635	3	1,122
Total	199	55,682	152	52,355
Departures in ballast	201	118,712	459	280,251
Total departures	400	174,394	611	332,606
Arrivals in 1886	406	181,078	602	312,019
Departures in 1886	219	69,110	181	53,933
1887 shows a decrease of English ships	.....	.....	49	15,006
1887 shows an increase in Spanish ships	.....	.....	.....	6,000

COASTING TRADE.

The merchandise loaded and unloaded on the quays of Nantes in 1887 amounted to: Exportation, 108,157 tons; importation, 382,880 tons; total, 491,037 tons.

Arrivals and departures from the ports of the Loire to other ports in France during the past five years.

Years.	Arrivals.				Departures.				Total.	
	Vessels loaded.		Vessels in ballast.		Vessels loaded.		Vessels in ballast.			
	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.
1887	1,361	161,003	434	44,452	1,315	112,767	404	39,782	3,514	358,004
1886	1,293	145,803	347	42,757	1,211	135,755	457	33,045	3,308	357,360
1885	1,349	118,809	361	31,813	1,233	100,399	525	34,203	3,448	265,224
1884	1,268	115,839	346	32,402	1,197	109,954	472	28,017	3,284	286,202
1883	1,270	98,695	378	37,801	1,227	95,448	467	34,887	3,342	266,831

The following items have been selected as most interesting to our business community, from the long list of imports and exports from the ports of the Loire in 1886 and 1887:

Imports in 1886 and 1887.

Articles.	1886.	1887.	From what countries.
	Kilograms.	*Kilograms.*	
Raw sugar	29,434,673	32,696,428	From the French colonies.
Cheese	307,757	273,486	Switzerland, Italy, Holland.
Raw hides	96,613	112,300	Cochin-China, New Grenada, Chili.
Wheat	35,944,775	51,486,763	United States, British India.
Rice	5,639,012	2,765,416	India, Italy.
Oleaginous grains and nuts	7,713,917	2,320,456	India, Africa, Senegal.
Tobacco	752,205	352,064	Algeria and Cuba.
Lard	289,557	5,543,310	England, Spain, Mexico.
Wood (buildings)	54,938,204	36,035,935	Russia, Sweden, Norway, Germany, United States, Canada.
Porcelain clay	3,851,014	4,017,958	England.
Tar and pitch	11,734,478	8,120,665	England, Russia, Belgium, United States.
Iron ore	37,338,023	14,054,700	Spain, Algeria, South America.
Copper ore	924,380	1,107,325	England, Hayti, South America.
Lead ore	10,965,067	8,578,207	England, Belgium, Spain, Italy.
Coal	580,299,566	554,374,236	England.
Petroleum	303,697	201,649	England, United States.
Starch	471,875	583,862	England, Germany, Belgium.

A treaty of commerce with France and direct communication with Nantes would open the market to the United States for the above articles, except coal and sugar.

Exports.

Articles.	1886.	1887.	To which countries.
	Kilograms.	*Kilograms.*	
Eggs, poultry, and game	3,421,187	5,832,177	French colonies, Mexico, England, S. America.
Cheese	96,327	78,449	Do.
Lard	145,963	120,705	French colonies, Mexico, Venezuela.
Salted butter	956,533	2,614,311	French colonies, England, Mexico, S. America, Canada.
Cereals and flour	12,447,967	11,536,672	French colonies, England, Norway, Holland.
Rice	306,716	570,154	French colonies, England, Norway, Mexico.
Potatoes	1,784,000	2,014,071	French colonies, England, Norway, Mexico, Hayti.

Receipts at the custom-house at Nantes.

From.	1886.	1887.
	Francs.	*Francs.*
Duty on imports	17,062,380	19,244,550
Tax on navigation	372,265	358,079
Tax Statistique	208,585	211,428
Accessories	50,277	64,439
Tax on salt	3,684,424	3,674,839
Total	21,377,981	23,553,335

Exports from the consular district for the years ending December 31, 1885, 1886, and 1887.

1885	$209,598
1886	253,557
1887	407,356

This is a very great increase in exports over previous years, for while the trade of Nantes for the past fifteen years has annually declined, that of the agencies has largely increased. The shipments from L'Orient in 1887 amounted to $197,043, and a large proportion of the remainder was from the Angers district, thus leaving not much more than one-fourth for the actual shipments from Nantes.

AGRICULTURE.

The depressed state of agriculture, which has prevailed since 1883, is yearly growing more intense. Farmers attribute this chiefly to foreign competition, and complain that the Government makes contracts abroad for the army and navy. By continued pressure upon the Government the agricultural interest succeeded in increasing the duties on corn, cattle, and meat, but farmers still protest that this protection is not sufficient. In 1885 the duty on cereals was advanced to about 6½ francs per quarter, and later to 11½ francs. Notwithstanding these increased duties, it will be seen by the accompanying tables that the prices of cereals and cattle have very materially fallen since 1885. The prices of live stock are 30 per cent., and in some localities 50 per cent., less than those of a few years since. The price of meat, however, to consumers has not fallen in proportion. French political economists have pointed out the baneful effect of the constant subdivision of land, which gradually creates a numerous class of small peasant proprietors, who are not in a position from want of capital to bring machinery into application, to purchase the manure requisite for their cultivation, or even to supply themselves with the best modern agricultural implements. This, together with the want of instruction in the art of agriculture, may account for the poor yield per acre extracted from the soil, averaging from 18 to 24 bushels. It has been justly said that the French farmers are hard-working, frugal, and thrifty. Their savings were usually invested in land, but now having to contend with the competition of other countries in cereals, they are unable, notwithstanding a protective tariff, to meet their pecuniary obli-

gations. The area of farms in this district varies from 25 to 150 acres, but small farms are the most numerous and the subdivision of the land is steadily increasing.

Farm laborers are paid from $70 to $90 per annum, with board and lodging; the working hours are fifteen, with three intervals for meals. Day laborers are paid about 40 cents per day. The productions consist of cereals, hemp, flax, colza, and other seeds.

Average price of cereals per hectoliter at Nantes for the years 1884, 1885, 1886, and 1887.*

Articles.	1884.	1885.	1886.	1887.
	Francs.	*Francs.*	*Francs.*	*Francs.*
Wheat	22.70	22.30	21.67	18.15
Rye	14.52	14.14	14.08	13.68
Barley	13.53	13.24	13.24	12.95
Buckwheat	11.97	11.94	12.11	11.86
Oats	11.24	10.95	10.93	10.63

* 1 hectoliter is = 2.75 bushels.

Table showing the number of cattle slaughtered at Nantes.

Animals.	1884.		1885.		1886.		1887.	
	No.	Francs.	No.	Francs.	No.	Francs.	No.	Francs.
Bullocks	3,585	507.50	3,258	489.00	2,232	437.50	1,854	389.50
Cows	1,199	367.25	845	369.75	485	359.25	609	305.25
Calves	28,852	67.50	27,207	67.75	24,072	61.00	24,228	49.75
Sheep	31,355	47.75	28,951	41.50	27,042	39.25	24,507	37.25

This table, though official, contains only the number of animals slaughtered in Nantes, as in order to avoid the tax at the slaughter-house many animals are now killed and dressed outside of the city.

While the commerce of Nantes has annually declined St. Nazaire has grown in wealth and importance. To afford accommodations for the increasing trade, a few years since a capacious dock was completed, nearly one mile in circumference, at a cost of 17,000,000 francs, and two years ago the railway was opened to Chateaubriant, affording direct communication with Paris, and not via Nantes, as heretofore.

Large store-houses have also been constructed, and the facilities for unloading cargoes of coal, wheat, etc., are admirable. Steamers of 1,000 or 1,200 tons capacity arrive with coal from England, discharge their cargoes, and depart in a few hours. Of the large number of arrivals and departures at the ports of the Loire reported in the foregoing tables not more than one-tenth come up to the city of Nantes.

L'Orient may be considered the center of the sardine fishing district, and owing to the activity of their merchants business has grown extensively at the expense of Nantes. The exports in 1885 amounted to $31,322 against $197,043 in 1887.

The business of the Angers district, which includes Saumur, St. Hilaire, Amboise, Le Mans, etc., has greatly increased within the past few years, and since the closing of the agency at Angers the invoices are verified by the consul at Nantes and credited as exports from the city of Nantes.

The attention of our manufacturers has frequently been called to the importance of the trade with this consular district, but no effort has been made on their part to secure it. With a very few exceptions American products are unknown. Carolina rice, petroleum from Pennsylvania, and lard, are advertised and largely sold, but are all purchased in Paris or Havre, thus greatly increasing the price to the purchaser.—NANTES, *September 20, 1888.*

H. A. SHACKELFORD,
Consul.

THE COMMERCE OF BELGIUM.

From official statistics, just issued, I am enabled to submit the following short report upon the commercial movement of Belgium with foreign countries, and the United States in particular, during the first six months of the present year, as compared with the same period of 1887.

In the importations from all countries there was an increase of 7 per cent. over the same period of the preceding year, and in the exportations for the same time there was no material change.

The following table shows the principal differences in value and the increase and decrease in the importations for the six months of 1888, as compared with the same period of 1887:

Increase in importations.

	Francs.		Francs.
Cattle	2,387,000	Petroleum	2,561,000
Horses and foals	1,023,000	Potatoes	2,745,000
Barley and malt	4,484,000	Oil-seed	10,842,000
Butter, fresh and salted	3,150,000	Ore, iron	1,444,000
Soda	11,845,000	Resin and bitumen	3,388,000
Flax, raw	3,444,000	Rice	2,452,000
Flour, meal, and bran	3,825,000	Thread of flax and other vegetable fiber	737,000
Hides, raw	2,543,000	Wheat	7,126,000
Iron, cast	2,548,000	Wine	756,000
Lead, unworked	799,000	Wood, building	627,000
Oats, Indian corn, and buckwheat	8,158,000	Woolen tissues, light	736,000
Peas, lentils, and beans	1,009,000		

Decrease in importations.

	Francs.		Francs.
Swine	743,000	Oils, vegetable, not alimentary	1,933,000
Cloth, cashmere, and other tissues of wool	640,000	Rye	1,361,000
Copper and nickel	2,129,000	Silk, raw	1,881,000
Meat	4,739,000	Tow and oakum	1,955,000

The following table shows the principal differences in value and the increase and decrease in the exportations for the six months of 1888, as compared with the same period of the preceding year:

Increase in exportations.

	Francs.		Francs.
Barley and malt	938,000	Oats, Indian corn, and buckwheat	2,928,000
Soda	1,043,000	Oil-seed	788,000
Other chemical products	1,916,000	Rags and shoddy	632,000
Flour, bran, and meal	4,404,000	Railway and horse cars, not of wood	3,535,000
Grease	1,648,000	Sugar, refined	1,023,000
Hides, raw	9,385,000	Wool	1,243,000
Mercery and hardware	839,000	Woolen tissues	1,228,000
Lead, unworked	886,000	Woolen yarn	720,000
Steel, worked	761,000		
Oils, vegetable alimentary	1,037,000		

Decrease in exportations.

	Francs.		Francs.
Cows	4,255,000	Zinc not worked	2,393,000
Oxen	1,318,000	Rye	1,752,000
Horses and foals	986,000	Silk, raw	882,000
Chicory	755,000	Stones, crude and worked	1,610,000
Coal	2,947,000	Sugar, raw	7,308,000
Flax	1,746,000	Thread of flax, and other vegetable fibre	2,077,000
Machines of metal	7,251,000	Tissues of flax, hemp, and jute	1,406,000
Meat	2,591,000	Tow and oakum	1,036,000
Copper and nickel, crude	636,000		
Iron in bars and sheets	1,417,000		

IMPORTATIONS TO THE UNITED STATES.

In the importations the United States were interested as follows:

Copper and nickel. — The total importations from all countries during the first six months of 1888 aggregated 2,011 tons, against 2,979 tons during the corresponding period of 1887, being a decrease of 968 tons, or 32 per cent.; 292 tons, or about 15 per cent. of the total imports of this article, came from the United States in 1888, while during the first half year of 1887 little more than one ton was received from there.

Cotton. — Cotton was imported to the amount of 12,776 tons during the first six months of 1888, against 13,947 tons in the corresponding months of 1887 — a slight decrease for 1888. The statistics do not give the quantities received from the different countries.

Flour and meal. — The total receipts from all countries amounted to 31,970 tons during the first half year of 1888, against 24,337 for the corresponding period of 1887, showing an increase of 7,633 tons, or 34 per cent. In the receipts of this merchandise from the United States there has been, however, a marked decrease, from 6,450 tons in 1887 to 4,264 tons in 1888, a difference of 2,186 tons, or 35 per cent.

Dried fruits. — In this article there has been an increase of 48,000 francs in value in the total imports, entirely due to the increased receipts from the

United States, whence came, during the six months of 1888, imports to the value of 98,500 francs, against 29,000 francs in the corresponding period of 1887. The imports of this article from Holland and Italy have fallen off.

Grease. — The total imports during the six months of 1888 amounted to 15,060 tons, an increase over the same period of 1887 of 511 tons. Of the amount, the United States furnished 7,185 tons, an increase of 803 tons, or 12½ per cent.

Meat. — The total importations of this article during the first six months of 1888 aggregated 5,734 tons — 4,478 tons, or 78 per cent., having been sent by the United States. The statistics do not give the quantity of this article imported during the corresponding period of 1887, but the table shows that there was a decrease for 1888 in value.

Oats, Indian corn, and buckwheat. — The total imports during the six months of 1888 were 150,106 tons, being an increase over the same period of 1887 of 51,000 tons, or 33 per cent. The imports from the United States of this merchandise, however, decreased from 21,969 tons in 1887 to 11,133 tons in 1888, a difference of 10,836 tons, or 50 per cent. The increase came from Russia.

Oils, vegetable, not alimentary. — Here the total imports have decreased from 12,664 tons to 9,979 tons, or over 20 per cent. This decrease was borne, in large proportion, by the United States, the same having been from 2,809 tons in 1887 to 1,995 tons in 1888, a decrease of 814 tons, or 29 per cent.

Oil-seed. — A marked increase is shown for 1888. From 46,581 tons during the six months of 1887 the rise has been to 85,304 tons, a difference in favor of 1888 of 38,722 tons, or nearly 85 per cent. From the United States the receipts were insignificant in 1888, while during the six months of 1887 1,045 tons were received thence. The increase came from England, India, and Russia.

Peas, lentils, and beans. — There were imported from all countries during the six months of 1888 14,456 tons, an increase of 5,047 tons, or over 50 per cent. over the corresponding period of the preceding year. The United States participated in 1887 to the extent of 1,312 tons (15 per cent.), but sent next to nothing during the six months of this year. France, Russia, and Roumania furnished the increase.

Petroleum. — The total imports were 75,969 tons during the six months of 1888, against 59,591 tons during the same period of the year preceding. Of that quantity 61,121 tons came from the United States, or 90 per cent. The imports of Russian petroleum more than doubled during the period named, say from 5,508 tons in 1887 to 12,674 tons in 1888.

Resin and bitumen. — There were received during the six months of 1888 63,838 tons, against 51,228 tons in the corresponding period of the year preceding, a gain of 12,550 tons, or nearly 15 per cent. Here the United States had an increase of 663 tons, participating in the total imports of this article to the extent of 11 per cent. in 1888, and 12½ per cent. in 1887.

Rye.—The total imports of this grain aggregated 52,697 tons during the first half year of 1888, against 62,423 tons during the corresponding period of 1887, showing a decrease of nearly 10,000 tons, or 16 per cent. The decrease in the receipts from the United States was large, the same having fallen off from 5,873 tons in 1887 to 693 tons in 1888.

Starch.—The importations of starch amounted to 1,890 tons during the first six months of 1888, which was an increase over the corresponding period of 1887 of nearly 100 tons; but the receipts from the United States have nearly tripled, having risen from 60 to 170 tons, the latter being nearly 10 per cent of the total imports of this article.

Sirups and molasses containing less than 50 per cent of saccharine matter.—During the first half of the year 1888 there were imported from all countries 1,423 tons, against 1,593 tons during the corresponding period of the year preceding, a slight decrease for 1888. From the United States only 8 tons of the above-named quantity were received in 1888, against 44 in 1887.

Sirups and molasses for distilling purposes.—For the half year of 1888 importations amounted to 9,783 tons, against 9,341 tons during the corresponding period of 1887, showing a slight increase for 1888. Here the United States participated largely, 2,948 tons, or over 30 per cent., having been received thence in 1888, and 4,387 tons, or nearly 50 per cent., in 1887. Holland is our principal competitor in this article, the imports from that country having increased from 3,397 tons in 1887 to 5,402 tons in 1888, a difference in favor of 1888 of nearly 2,000 tons.

Leaf tobacco.—The total receipts of this merchandise were a little over 4,000 tons in the half year of 1888, the same as the year before, the United States participating in 1888 to the extent of 1,797 tons, or 45 per cent., and in the year preceding 2,353 tons, or nearly 60 per cent. Holland also contributed largely in this article, having furnished about 25 per cent. of the total imports in both years.

Manufactured tobacco, as cigars and cigarettes.—The amount received was 88 tons, the same as in 1887, respectively 40 and 45 per cent. having been furnished by the United States.

Wheat.—The importations of wheat amounted to 350,621 tons during the six months of 1888, against 314,980 tons the year before, an increase of 35,632 tons, or over 11 per cent. In the receipts of this merchandise from the United States there was an unusually large falling off—from 163,456 tons in 1887 to 45,263 tons, a difference of 118,000 tons, or nearly 75 per cent., and the percentage in the total imports has fallen off from 48 per cent. to less than 14 per cent. There was a large increase in the receipts from Russia and Roumania.

Wood for building purposes.—Oak and walnut was received to the amount of 31,000 cubic meters during the six months of 1888, against 34,000 cubic meters in the corresponding period of 1887, being a decrease of 3,000 cubic meters, or 9 per cent. The receipts from the United States have largely increased, having been only 298 cubic meters in 1887, as against 2,387 in 1888.

Prepared wood for construction of other kinds. — There was a large increase as to the receipts from the United States, the same having risen from 6,275 cubic meters during the first half year of 1887 to 10,479 cubic meters during the same period of 1888, an increase of over 4,000 cubic meters, or about 65 per cent. The total receipts (196,000 cubic meters) in 1888 were a little better than during the corresponding period of 1887.

EXPORTATIONS.

Arms. — Exports during the first six months of 1888 amounted to 5,100,000 francs, against 4,900,000 francs during the corresponding period of 1887, respectively 480,000 and 777,000 francs' worth having gone to the United States, showing a decrease for the present year of 297,000 francs, nearly 40 per cent.

Chemical products. — The exportations aggregated 7,900 tons in the six months of 1888 and 5,992 tons the year before, respectively 438 and 592 tons having gone to the United States.

Clothing, ready-made. — During the six months of 1888 exports amounted to 4,947,000 francs, being a slight increase over the corresponding period of the preceding year. The United States had 1,500,000 francs in 1888 and 1,750,000 francs in 1887.

Looking-glasses and mirrors. — Exports to the value of 3,252,000 francs were made during the half year of 1888, against 3,581,000 francs the corresponding half year of 1887, a slight decrease. The United States took about one-third of the total exportation both years.

Ordinary glassware. — The exports amounted to 5,321 tons during the first half year of 1888, being a slight decrease as compared with the corresponding period of 1887. In the exportation to the United States of this article, however, there was a very large increase, the same having been from 314 tons for the six months of 1887 to 1,193 tons, a difference in favor of the half year of 1888 of 879 tons.

Window-glass. — This is an article that is very extensively manufactured in Belgium, and its exportation is increasing from year to year. During the half year of 1888 there were exported 59,208 tons, against 57,034 tons the corresponding half year of 1887, showing an increase of over 2,000 tons. The United States had respectively 16,548 and 14,742 tons, an increase for 1888 of over 1,800 tons, or 12½ per cent., and more than any other country.

Raw hides. — There were exported a total amount of 16,710 tons in the six months of 1888, which was an increase of 5,500 tons, or about 50 per cent., over the corresponding period of the preceding year. The exportation of this article to the United States has likewise increased from 1,300 tons in 1887 to 1,700 tons in 1888.

Prepared and tanned hides. — There were exported a little over 1,200 tons both in the six months of 1888 and in 1887, the United States having had respectively 43 and 76 tons of the above-mentioned quantities.

Hops.—There were 635 tons sent out during the half year of 1888, against 1,125 tons for the corresponding period of the preceding year, a decrease of 490 tons, or nearly 50 per cent. In the exportation of this article to the United States the decrease has been in the same proportion, it having fallen off from 181 to 96 tons.

Iron in bars and sheets.—During the half year of 1888 there left Belgium 110,000 tons, being a slight decrease as compared with the corresponding period of the preceding year. The United States took respectively 4,700 and 5,300 tons of the above quantities, being a slight decrease for 1888.

Old iron.—Scarcely any was exported during the half year of 1888, while the statistics give the exports of the corresponding period of the preceding year at 7,520 tons, 6,400 tons of this (85 per cent.) having gone to the United States.

Iron rails.—There were exported 5,408 tons in the six months of 1888, being a decrease of about 1,500 tons as compared with the corresponding period of 1887. In the exportation to the United States of this article the decrease was in larger proportion, the figures having been 750 tons in 1888 against 1,042 tons in 1887.

Linen laces.—During the half year of 1888 the exportation amounted to 53,000 francs, against only 28,500 francs during the six months of 1887, the United States participating only in 1887 to the value of 950 francs.

Paper (wall and paste-board excluded).—Exports amounted to 9,600 tons during the six months of 1888, being about the same as the year before. The United States participated both years only slightly in this article.

Peas, lentils, and beans.—These left the country to the amount of 5,912 tons, against 4,455 tons the corresponding period of the preceding year, an augmentation for 1888 of nearly 1,500 tons, or over 30 per cent. The United States had 1,882 tons, over 30 per cent. of the said exportation in 1887, but only 181 tons in 1888. About one-half of the exportation of this merchandise was to France.

Rags and shoddy.—The total exports of this article aggregated 17,589 tons during the first half year of 1888, being an increase of nearly 3,000 tons over the corresponding period of 1887. Of this amount 3,638 tons went to the United States in 1888 and 2,807 tons in 1887, making an increase for 1888 of over 800 tons, or nearly 30 per cent.

Soda.—There left Belgium 18,000 tons during the half year of 1888, against 15,000 tons the corresponding period of 1887, only 18 tons of this having gone to America in 1888 and 217 tons in 1887.

Steel in bars, sheets, or wire.—Exports during the six months of 1888 amounted to 14,582 tons, being a slight increase over the same period of 1887. The United States had the lion's share in this article, having had 9,032 tons, or nearly 75 per cent.

Crude cast-steel.—During the six months of 1888 there were sent out 2,850 tons, while the year before only 430 tons left the country. The United States took more than half of this exportation both years.

Steel rails. — The exports during the half year of 1888 amounted to 28,041 tons, being a slight increase over 1887. Only a few hundred tons of this went to us.

Raw sugar. — In this merchandise there was a large decrease in the exportation during the half year of 1888, as compared with the same period of 1887, the quantities having been respectively 24,555 tons and 41,226 tons, showing a falling off for 1888 of 16,671 tons, or nearly 40 per cent. The United States had none in 1888, but 572 tons in 1887.

Tissues of cotton. — Exports amounted to 2,865 tons during the half year of 1888, being a slight decrease over the corresponding period of 1887. In the exportation of this article to the United States, however, there was a large increase for 1888, the quantities for the six months having been 109 tons for 1888 against 34 tons for 1887.

Tissues of flax, hemp, and jute. — Exports to the amount of 913 tons were made during the six months of 1888, against 1,151 tons the year preceding, a decrease of over 20 per cent. To the United States there were exported respectively 16 and 36 tons, a decrease of over 50 per cent.

Tissues of silk. — There were 9,176 kilograms exported during the first half year of 1888, against 4,367 kilograms the corresponding period of 1887, showing an increase of 4,809 kilograms, more than 50 per cent. The United States had respectively 1,225 and 1,270 kilograms, a slight decrease for 1888.

Tissues of wool, as broadcloth, cashmere, and coatings. — The exports amounted to 850 tons during the six months of 1888, against 760 tons the year before, the United States having had respectively 62 and 35 tons.

Wool, raw. — Wool to the amount of 53,654 tons left Belgium during the first half year of 1888, against 51,960 tons during the corresponding period of 1887, showing an increase of about 2,500 tons. Only very little of the above quantities went to the United States. — ANTWERP, *September 7, 1888.*

JOHN H. STEUART,
Consul.

DETERIORATION OF HENEQUEN FIBER CAUSED BY RECENT HURRICANE.

On the 10th of September the hurricane that swept the Island of Cuba expended a portion of its force upon Yucatan, and especially upon its coast line.

Contrary to the published newspaper reports, the port of Progreso and the shipping therein suffered little actual damage, but the henequen-growing belt suffered severely. Upon my return to Merida from Progreso, where I had been to aid an American vessel, I noticed that the henequen plants upon the haciendas through which the railroads passed presented a peculiar appearance. Collecting some of the leaves, as specimens, and examining them under my microscope I found the cells to be in places completely crushed, owing to the vibrations of the leaves, they being impacted one against the other by the force of the gale. The leaf thus bruised eventually withers and dies around and above the bruised portion, leaving a mass of dried pulp and blackened decayed fiber.

I have just returned from making a thorough survey of the henequen-growing belt of Yucatan, and, as a result, I believe it to be a fact that at least 25 per cent. of the mature and maturing leaves are thus affected and I regard it as none the less certain that the planters will, during the next six months, try to work off a portion of this decayed and blackened fiber upon the consumers by mixing it in or concealing it among hemp bales, whose outside appearance is that of first-class stock. This, if done, will cause great loss to our manufacturers of rope and binding-twine. I have warned the principal planters of the trouble they will have if such proceedings are allowed to take place. — MERIDA, *October 2, 1888.*

EDWARD H. THOMPSON,
Consul.

DETENTION OF COFFEE AND OTHER EXPORT PRODUCTS.

As an apt illustration of the necessity in this country of additional railways, or other improved means of communication, I call attention to the accumulation of products for export now existing at Puerto Villamizar, the river port of the Colombian city of Cucuta and the head of navigation upon the river Zulia. The drouth of the past few months, which, although somewhat excessive, has been by no means extraordinarily remarkable, has caused such a diminution of water in the above-mentioned river that there are at present no less than 30,000 bags of coffee, besides 8,000 hides, and a large amount of various other valuable products awaiting transportation to Maracaibo.

Although the locality of this large accumulation is upon Colombian territory, the greater part is produced in Venezuela, as, owing to the present very unsatisfactory transit methods, the productions of a large part of this section are necessarily obliged to take this route. This delay causes considerable embarrassment to our Maracaibo exporters, and at times serious losses, as the coffee market abroad is always uncertain and fluctuating.—MARACAIBO, *October 2, 1888.*

E. H. PLUMACHER,
Consul.

HAMBURG'S SHIPPING.

It is a fact generally known that Hamburg is by far the most important sea-sea-port on the European continent, but few of those interested in shipping matters have a remote idea to what extent this distinction is justified. The number of sea-going vessels arriving in and departing from Hamburg is a very great one, but, as the inclosed tables will show, it is also steadily on the increase. It is a fact worthy of notice that the value of imports from the United States into Hamburg has continued to increase, notwithstanding the sharp competition on the part of the North German-Lloyds, of Bremen, in running two of their fast steamers per week during the greater part of the year.

Taking the year 1887, for which complete statistics have now been issued, it will be found that no fewer than 7,308 sea-going vessels arrived at Hamburg. Of this number 4,753 were steam-ships, varying in size from 100 to 2,600 registered tons net. This shows that British vessels alone enjoy almost as great a share of the carrying trade as Prussia and Hamburg combined.

During 1887 there sailed from Hamburg 7,338 sea-going vessels, of which 4,775 were steam-ships; 1,174 of the 8,538 sailed belonged to Prussia, 1637 to Hamburg, and 2,488 to Great Britain. The difference in the number of those arrived and those sailed is only 30, which amounts to an increase of over 500 vessels in two years.

	Arrived.	Sailed.
1885	6,790	6,798
1886	6,913	6,906
1887	7,308	7,338

As will be seen in Table III the tonnage of vessels arrived during each year, from 1885 to 1887 inclusive, was as follows: 1885, 3,704,112 tons; 1886, 3,791,992 tons; 1887, 3,920,234 tons; while that of the vessels sailed for the same period was, in 1885, 3,712,394 tons; 1886, 3,786,845 tons; 1887, 3,927,865 tons.

When it is considered that these figures apply to sea-going vessels only, they must necessarily surprise. A gentleman long connected with the shipping business, both in New York and in this city, to whom I had occasion to show these figures a day or two ago, told me that he had always considered himself pretty well posted on all matters touching the shipping of Hamburg, but he had never thought that the amount of tonnage arriving and departing was so great. The average loading capacity of sailing vessels was 257.66 tons, and that of steam-ships 689.66 tons. About one-half of the sailing vessels are of less than 100 tons burden.

The same table shows that of the vessels arrived in 1885, 5,856 carried cargo and 934 carried ballast; 1886, 5,920 carried cargo and 993 carried ballast; 1887, 6,338 carried cargo and 970 carried ballast. Of the vessels sailed in 1885, 5,142 carried cargo and 1,656 carried ballast; 1886, 5,320 carried cargo and 1,586 carried ballast; 1887, 5,564 carried cargo and 1,774 carried ballast.

The number of vessels sailing in ballast is very great. In 1887 24.18 per cent. of all sailed carried ballast. This circumstance is, however, accounted for satisfactorily by the fact that most of these vessels are either British coalers returning to England, fishermen putting out for their catch, or small craft belonging to the various isles in the Baltic and German oceans.

A comparison between the number of sailing and steam vessels for the three years 1885, 1886, and 1887 gives the following result: 1885, 34.1 per cent. sailing, 65.9 per cent. steam; 1886, 32.7 per cent. sailing, 67.3 per cent. steam; 1887, 34.7 per cent. sailing, 65.3 per cent. steam; showing but a slight variation from year to year. During 1887 there arrived on the average about 13 steamers per day.

All the incoming sea-going vessels during the same year together were manned by 109,639 men, or an average of 15 men per vessel. The outgoing vessels carried 109,827 men, or an average of over 14 men per vessel. The average crew of American vessels was over 16. The small number of vessels belonging to the United States are principally of more than 1,200 tons burden and engaged in carrying petroleum to Hamburg, while their cargo outward generally consists of empty petroleum barrels and manure salt in bulk.

The great facilities which Hamburg offers as a port have been described in detail in a former report from this office. Since then, however, all the port arrangements have undergone a complete change, owing to Hamburg's entry into the Imperial German Customs Union. A comparatively small part

of the harbor has been reserved as a free port, the boundaries of which have been strongly fenced in and otherwise guarded. Property within these limits has increased enormously in value. Extensive docks, warehouses, sheds, etc., have been erected, and, to judge from the number of new sailing and steam-vessels building for Hamburg account, this new port promises to become well patronized. All of the Hamburg steam-ship lines are increasing their fleets, and as a proof that the days of sailing vessels are not numbered I would mention that one firm alone recently gave an order for the construction of four large iron sailing vessels. The stocks of all of the ship-building yards are full. I am informed that at present over forty large sailing and steam vessels are building in Hamburg alone, without mentioning many others in course of construction for Hamburg account in other German and foreign yards.

The Hamburg South American Company leads all the lines, as regards additions to their fleets, now having about twenty-four large steamers engaged in the trade. Then there is a new line which has just been organized to run large steamers between here and Australia. They are to have six steamers to begin with. The King Sin line, plying between here and China and Japan, has also ordered new steamers. The Kosmos and the Pacific lines, which divide the business between Hamburg and the west coast of South America, own only new boats and are ordering more. Last, but not least, there is the Hamburg-American Packet Company, which at last seems to have awakened to the fact that they had better move with the times or be crowded out by strong competition. This, however, refers only to their New York line. They have lately increased their capital stock to 30,000,000 marks (about $7,000,000), have sold three of their largest steamers, the Frisia, Westphalia, and Lessing, and are now building two fast steamers of about 10,000 tons each for passenger traffic, and three freight and emigrant boats of about 4,000 tons each. The two former are to eclipse everything that has so far been produced in ocean steam-ships, the contract calling for an average speed of 19 knots an hour. Including stoppages they will therefore presumably make the run from New York to Hamburg in eight days. At present the American mails hardly ever arrive before the tenth day after leaving New York.

With the above mentioned additions and two boats building for the West India line, the fleet of the Hamburg-American Packet Company will next year number thirty-five first-class steamers. The confidence of the investing public, as far as this and most other companies are concerned, is steadily growing. Large purchases by investors of Hamburg-American Packet Company's stock have been made, and it is now strong and quoted at $1.42.

It is impossible for me to say whether this remarkable activity and prosperity in the ocean shipping of this port can and will continue, but in all probability it will, for some time to come at least. Hamburg is in direct communication with nearly every part of the world, and in 1887 imported merchandise by sea alone valued at over $25,000,000. — HAMBURG, *October 5, 1888.*

CHAS. H. BURKE,
Vice and Deputy Consul.

Countries and coasts arrived from—	With cargo.		In ballast.	
	Vessels.	Registered tons.	Vessels.	Registered tons.
Prussia: Province of—				
Prussia	66	19,401	.....	.....
Pomerania	4	479	2	2,295
Schleswig-Holstein, on the Baltic	50	4,743	10	7,840
Schleswig-Holstein, on the North Sea	73	2,468	23	1,134
Schleswig-Holstein, on the Lower Elbe	5	321	252	27,593
Hanover, eastern part, on the North Sea	55	1,109	3	2,527
Hanover, on the Lower Elbe	18	2,564	234	35,408
Hanover, western part, including Jade district	76	2,511	1	20
Rhineland	3	185	.....	.....
Oldenburg	157	5,878	10	2,607
Mecklenburg	2	99	2	1,455
Bremen	461	86,291	196	20,565
Hamburg (Cuxhaven and islands of the Lower Elbe)	3	266	49	1,875
Total of Germany	973	126,315	782	103,319
European Russia, on the White Sea and Arctic Ocean	5	879	.....	.....
European Russia, on the Baltic	81	39,058	.....	.....
European Russia, on the Black Sea and Sea of Azof	66	83,638	.....	.....
Sweden	252	45,158	2	102
Norway with Spitzbergen	178	87,576	3	1,260
Denmark, with Iceland and Faro	53	7,735	6	4,947
Heligoland	170	37,092	11	324
Great Britain and Ireland (coalers)	859	555,292	.....	.....
Great Britain and Ireland (vessels with other cargo)	1,947	1,217,721	89	69,634
The Netherlands	294	66,073	29	15,285
Belgium	86	65,480	10	9,798
France, on the Atlantic	120	60,251	36	17,979
France, on the Mediterranean	36	25,033	.....	.....
Spain, on the Atlantic	45	31,183	1	108
Spain, on the Mediterranean, and Gibraltar	50	38,284	.....	.....
Portugal, including the Azores	82	45,300	.....	.....
Italy and Malta	39	41,134	.....	.....
Austria-Hungary	13	10,687	.....	.....
Greece	6	4,130	.....	.....
Roumania	2	1,847	.....	.....
Turkey in Europe	4	2,876	.....	.....
Total of Europe, exclusive of Prussia, etc.	4,338	2,466,427	187	119,437
British North America	10	14,197	.....	.....
United States, on the Atlantic	319	445,451	.....	.....
Mexico, on the Atlantic	69	32,167	.....	.....
Mexico, on the Pacific	15	8,988	.....	.....
Central America, on the Pacific	3	1,415	.....	.....
West Indies	85	76,962	.....	.....
South America, on the Atlantic, north of Brazil	13	4,152	.....	.....
Brazil	104	102,680	.....	.....
South America, on the Atlantic, south of Brazil	46	50,783	.....	.....
Chili	150	148,267	.....	.....
The rest of South America, on the Pacific	22	9,701	.....	.....
Algiers	3	552	.....	.....
Cape Colony and Natal	2	499	.....	.....
Africa, on the Atlantic	51	54,389	.....	.....
Africa, on the Indian Ocean	7	3,530	1	174
Asia, on the Mediterranean and Black Seas (Levant)	1	724	.....	.....
East India and Indian Isles	57	76,561	.....	.....
China	32	32,934	.....	.....
Japan	14	25,447	.....	.....
Australia, with islands in the Pacific	24	15,163	.....	.....
Total of non-European countries	1,027	1,104,562	1	174
RECAPITULATION.				
Germany	973	126,315	782	103,319
Europe, exclusive of Germany	4,338	2,466,427	187	119,437
Non-European countries	1,027	1,104,562	1	174
Vessels with cargo	6,338	.....	.....	.....
Vessels in ballast	.....	.....	970	.....
Total of vessels	.....	.....	.....	.....
Tonnage in registered tons of vessels laden	.....	3,697,304	.....	.....
Tonnage in registered tons of vessels in ballast	.....	.....	.....	222,930
Tonnage in registered tons of all vessels	.....	.....	.....	.....
Crews of all vessels	.....	.....	.....	.....

Total.		Steam-ships.		Crews of all vessels.	Under German flag. Home port in —					
					Hamburg.		Bremen.		Lübeck.	
Vessels.	Registered tons.	Vessels.	Registered tons.		With cargo.	In ballast.	With cargo.	In ballast.	With cargo.	In ballast.
66	19,401	50	18,311	726	4	.....	.....	.....	.....	.....
6	2,774	3	2,647	81	.....	1	.....	.....	.....	.....
60	12,583	26	10,439	430	2	5	.....	.....	.....	.....
96	3,602	.....	.....	228	3	1	.....	.....	.....	.....
257	27,914	10	2,567	1,144	1	13	.....	4	.....	.....
58	3,636	1	1,552	156	.....	1	.....	1	.....	.....
252	37,972	10	4,545	1,366	.....	18	2	5	.....	.....
77	2,531	.....	.....	179	.....	.....	.....	.....	.....	.....
3	185	.....	.....	9	.....	.....	.....	.....	.....	.....
167	8,485	7	2,277	467	3	.....	2	2	.....	.....
4	1,554	.....	.....	21	.....	1	.....	.....	.....	.....
657	106,856	232	24,882	3,232	3	4	359	185	.....	.....
52	2,141	2	174	134	2	14	.....	.....	.....	.....
1,755	229,634	341	67,394	8,173	18	58	363	197	.....	.....
5	879	.....	.....	32	.....	.....	.....	.....	.....	.....
81	39,058	75	38,445	1,185	35	.....	2	.....	.....	.....
66	83,638	66	83,638	1,457	8	.....	.....	.....	.....	.....
254	45,260	108	35,958	1,902	39	.....	4	.....	.....	.....
181	88,836	160	86,901	2,837	.....	.....	.....	.....	.....	.....
59	12,682	16	9,271	418	3	2	.....	.....	.....	.....
181	37,416	168	37,048	1,860	161	.....	.....	.....	.....	.....
809	555,292	778	546,369	13,436	300	.....	1	.....	.....	.....
2,036	1,287,355	1,959	1,277,902	38,072	387	13	.....	1	.....	.....
323	81,358	205	73,868	3,385	2	7	1	.....	.....	.....
96	75,278	89	73,520	1,893	52	2	1	.....	.....	.....
156	78,230	102	66,861	2,394	3	16	.....	.....	.....	.....
36	25,033	33	23,903	718	29	.....	.....	.....	.....	.....
46	31,291	41	30,237	866	2	1	.....	.....	.....	.....
50	38,284	50	38,284	1,053	.....	.....	.....	.....	.....	.....
82	45,300	78	43,635	1,423	3	.....	7	.....	.....	.....
39	41,134	38	40,982	852	36	.....	1	.....	.....	.....
13	10,687	13	10,687	265	13	.....	.....	.....	.....	.....
6	4,130	6	4,130	106	4	.....	.....	.....	.....	.....
2	1,847	2	1,847	37	.....	.....	.....	.....	.....	.....
4	2,876	2	2,344	57	.....	.....	.....	.....	.....	.....
4,525	2,585,864	3,989	2,525,840	74,248	1,077	41	17	1	.....	.....
10	14,197	9	14,030	256	9	.....	.....	.....	.....	.....
319	445,451	137	273,938	11,501	118	.....	76	.....	.....	.....
69	32,167	12	16,062	906	19	.....	6	.....	.....	.....
15	8,988	.....	.....	190	4	.....	.....	.....	.....	.....
3	1,415	.....	.....	33	.....	.....	.....	.....	.....	.....
85	76,962	44	61,424	1,909	39	.....	1	.....	1	.....
13	4,152	1	1,103	126	7	.....	.....	.....	.....	.....
104	102,680	62	91,097	2,938	60	.....	1	.....	.....	.....
46	50,783	30	44,108	1,300	28	.....	.....	.....	.....	.....
150	148,267	35	42,154	3,208	76	.....	.....	.....	.....	.....
22	9,701	.....	.....	220	6	.....	.....	.....	.....	.....
3	552	.....	.....	20	.....	.....	.....	.....	.....	.....
2	499	.....	.....	17	.....	.....	.....	.....	.....	.....
51	54,389	47	53,027	1,397	26	.....	.....	.....	.....	.....
8	3,704	4	2,340	129	6	1	.....	.....	.....	.....
1	724	1	724	16	.....	.....	.....	.....	.....	.....
57	76,561	28	47,715	1,429	6	.....	10	.....	.....	.....
32	32,934	19	21,349	819	24	.....	1	.....	.....	.....
14	25,447	14	25,447	490	1	.....	.....	.....	.....	.....
24	15,163	.....	.....	314	2	.....	.....	.....	.....	.....
1,028	1,104,736	443	693,918	27,218	431	1	95	.....	1	.....
1,755	229,634	341	67,394	8,173	18	58	363	197	.....	.....
4,525	2,585,864	3,989	2,525,840	74,248	1,077	41	17	1	.....	.....
1,028	1,104,736	443	693,918	27,218	431	1	95	.....	1	.....
.....	.....	†4,773	3,287,152	.....	1,526	.....	475	.....	1	.....
.....	.....	.....	.....	.....	.....	100	.....	198	.....	.....
*7,308	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	1,289,157		189,166			241
.....	.....	.....	.....	.....	53,487		19,103		.....	.....
.....	3,920,234	.....	.....	.....	1,342,644		208,269			241
.....	.....	.....	.....	109,639	37,155		4,758			8

* Besides, there were built in the port district five new vessels, with a tonnage of 5,464 tons.

† Of which, with cargo, 4,416 steam-ships, with a tonnage of 3,147,660 tons; in ballast, 357 steam-ships, with tonnage of 139,492 tons.

Countries and coasts arrived from—	Under German flag. Home port in—					
	Prussia.		Mecklenburg.		Oldenburg.	
	With cargo.	In ballast.	With cargo.	In ballast.	With cargo.	In ballast.
Prussia: Province of—						
Prussia	60	.....	.....	.....	.....	.....
Pomerania	3	.....	1	.....	.....	.....
Schleswig-Holstein, on the Baltic	45	4	1	.....	1	.....
Schleswig-Holstein, on the North Sea	65	21	.....	.....	2	.....
Schleswig-Holstein, on the Lower Elbe	2	160	.....	6	1	4
Hanover, eastern part, on the North Sea	48	1	.....	.....	7	.....
Hanover, on the Lower Elbe	12	79	.....	2	1	4
Hanover, western part, including Jade district	70	1	.....	.....	4	.....
Rhineland	.....	.....	.....	.....	.....	.....
Oldenburg	125	2	.....	.....	26	4
Mecklenburg	1	1	.....	.....	1	.....
Bremen	54	2	.....	.....	35	1
Hamburg (Cuxhaven and islands of the Lower Elbe)	1	34	.....	.....	.....	.....
Total of Germany	486	306	1	8	78	13
European Russia, on the White Sea and Arctic Ocean	3	.....	.....	.....	1	.....
European Russia, on the Baltic	10	.....	1	.....	1	.....
European Russia, on the Black Sea and Sea of Azof	4	.....	.....	.....	.....	.....
Sweden	112	1	1	.....	2	.....
Norway, with Spitzbergen	13	.....	.....	.....	1	.....
Denmark, with Iceland and Faro	31	.....	.....	.....	.....	.....
Heligoland	5	1	2	.....	.....	.....
Great Britain and Ireland (coalers)	48	.....	.....	.....	1	.....
Great Britain and Ireland (vessels with other cargo)	36	.....	.....	.....	.....	3
The Netherlands	45	4	.....	.....	1	.....
Belgium	2	1	.....	.....	1	.....
France, on the Atlantic	7	7	3	.....	1	3
France, on the Mediterranean	1	.....	1	.....	.....	.....
Spain, on the Atlantic	.....	.....	.....	.....	.....	.....
Spain, on the Mediterranean, and Gibraltar	.....	.....	.....	.....	.....	.....
Portugal, including the Azores	2	.....	.....	.....	38	.....
Italy and Malta	.....	.....	.....	.....	.....	.....
Austria-Hungary	.....	.....	.....	.....	.....	.....
Greece	.....	.....	.....	.....	.....	.....
Roumania	.....	.....	.....	.....	.....	.....
Turkey in Europe	.....	.....	.....	.....	.....	.....
Total of Europe, exclusive of Prussia, etc.	319	14	8	.....	47	6
British North America	.....	.....	.....	.....	.....	.....
United States, on the Atlantic	13	.....	5	.....	1	.....
Mexico, on the Atlantic	3	.....	1	.....	10	.....
Mexico, on the Pacific	2	.....	.....	.....	.....	.....
Central America, on the Pacific	1	.....	.....	.....	1	.....
West Indies	4	.....	2	.....	1	.....
South America, on the Atlantic, north of Brazil	2	.....	.....	.....	.....	.....
Brazil	3	.....	1	.....	3	.....
South America, on the Atlantic, south of Brazil	.....	.....	1	.....	.....	.....
Chili	2	.....	.....	.....	9	.....
The rest of South America, on the Pacific	6	.....	.....	.....	3	.....
Algiers	.....	.....	.....	.....	.....	.....
Cape Colony and Natal	.....	.....	.....	.....	.....	.....
Africa, on the Atlantic	1	.....	.....	.....	.....	.....
Africa, on the Indian Ocean	.....	.....	.....	.....	.....	.....
Asia, on the Mediterranean and Black Seas (Levant)	.....	.....	.....	.....	.....	.....
East India and Indian Isles	1	.....	1	.....	.....	.....
China	.....	.....	.....	.....	1	.....
Japan	1	.....	.....	.....	.....	.....
Australia, with islands in the Pacific	2	.....	2	.....	5	.....
Total of non-European countries	41	.....	13	.....	34	.....
RECAPITULATION.						
Germany	486	306	1	8	78	13
Europe, exclusive of Germany	319	14	8	.....	47	6
Non-European countries	41	.....	13	.....	34	.....
Vessels with cargo	846	.....	22	.....	159	.....
Vessels in ballast	.....	320	.....	8	.....	19
Total of vessels	.....		.....		.....	
Tonnage in registered tons of vessels laden		99,444		7,993		44,157
Tonnage in registered tons of vessels in ballast		23,472		2,520		5,532
Tonnage in registered tons of all vessels		122,916		10,513		49,688
Crews of all vessels		5,078		290		1,464

Under foreign flag.

Russian.		Swedish.		Norwegian.		Danish.		British.		Dutch.	
With cargo.	In ballast.	With cargo.	In ballast.	With cargo.	In ballast.	With cargo.	In ballast.	With cargo.	In ballast.	With cargo.	In ballast.
						1				1	
		1									
										1	1
										3	
					11		30		5	1	18
1			2	2	11		8		92		11
								1		1	
										3	
			1		1					1	
				1							
			1				1	2	2	6	
	1										
1	1	1	4	3	23	1	39	3	99	17	30
						1					
1		2				26		2		1	
								51			
		76		5		10			1	3	
		1		158	3	2				3	
			1			18	2		1	1	
								2	10		
						3		452		3	
		1		6	1	7	1	1,499	62	6	1
							1	2	10	243	2
						6		20	7	2	
1		2			1	6	4	6	4	6	
1		1						3			
				1				16			
								1			
								31			
								1			
								2			
								2			
								3			
3		83	1	170	5	79	8	2,093	95	268	3
								1			
3		6		42		1		45		1	
1		2		18		4		3		2	
				1		3		4			
		6		12		2		11		1	
				1		2		1			
		3		13		2		13		3	
		2		2				8			
		1		1				57			
				3		3		1			
								3			
		1		1							
								19			
				1							
				1							
				1		1		34		1	
				2				2			
								11			
		4		1		1		6			
4		24		100		19		219		8	
1	1	1	4	3	23	1	39	3	99	17	30
3		83	1	170	5	79	8	2,093	95	268	3
4		24		100		19		219		8	
8		108		273		99		2,315		293	
	1		5		28		47		194		33
	4,328		38,892		145,572		34,540		1,620,675		70,659
	350		1,200		11,535		9,619		75,506		4,129
	4,678		40,092		157,107		44,159		1,696,181		74,188
	121		1,366		4,296		1,500		45,877		3,185

Countries and coasts arrived from—	Under foreign flag.			
	Belgian.		French.	
	With cargo.	In ballast.	With cargo.	In ballast.
Prussia: Province of—				
Prussia				
Pomerania				
Schleswig-Holstein, on the Baltic				
Schleswig-Holstein, on the North Sea				
Schleswig-Holstein, on the Lower Elbe				
Hanover, eastern part, on the North Sea				
Hanover, on the Lower Elbe				
Hanover, western part, including Jade district				
Rhineland				
Oldenburg				
Mecklenburg				
Bremen				
Hamburg (Cuxhaven and islands of the Lower Elbe)				
Total of Germany				
European Russia, on the White Sea and Arctic Ocean				
European Russia, on the Baltic				
European Russia, on the Black Sea and Sea of Azof				
Sweden				
Norway, with Spitzbergen				
Denmark, with Iceland and Faro				
Heligoland				
Great Britain and Ireland (coalers)	1			
Great Britain and Ireland (vessels with other cargo)				1
The Netherlands				
Belgium	1			
France, on the Atlantic			85	1
France, on the Mediterranean				
Spain, on the Atlantic				
Spain, on the Mediterranean, and Gibraltar				
Portugal, including the Azores				
Italy and Malta				
Austria-Hungary				
Greece				
Roumania				
Turkey in Europe				
Total of Europe, exclusive of Prussia, etc	2		85	2
British North America				
United States, on the Atlantic				
Mexico, on the Atlantic				
Mexico, on the Pacific				
Central America, on the Pacific				
West Indies				
South America, on the Atlantic, north of Brazil				
Brazil				
South America, on the Atlantic, south of Brazil				
Chili			2	
The rest of South America, on the Pacific				
Algiers				
Cape Colony and Natal				
Africa, on the Atlantic	4		1	
Africa, on the Indian Ocean				
Asia, on the Mediterranean and Black Seas (Levant)				
East India and Indian Isles				
China				
Japan			1	
Australia, with islands in the Pacific			1	
Total of non-European countries	4		5	
RECAPITULATION.				
Germany				
Europe, exclusive of Germany	2		85	2
Non-European countries	4		5	
Vessels with cargo	6		90	
Vessels in ballast				2
Total of vessels				
Tonnage in registered tons of vessels laden		5,434		59,708
Tonnage in registered tons of vessels in ballast				2,595
Tonnage in registered tons of all vessels		5,434		62,303
Crews of all vessels		142		1,860

Under foreign flag.

Spanish.		Portuguese.		Italian.		Austrian.		Greek.		North American.	
With cargo.	In ballast.	With cargo.	In ballast.	With cargo.	In ballast.	With cargo.	In ballast.	With cargo.	In ballast.	With cargo.	In ballast.
									1		
					1						
	1						1				
1											
1	1				1		1		1		
								3			
5	6										
	5										
1											
26											
49											
1				1							
82	11			1				4			
1				1						6	
										1	
				1							
1				2		2					
		1				1					
				5		1					
				1						1	
				2							
				1						1	
2		1		13		4				9	
1	1				1		1		1		
82	11			1				4			
2		1		13		4				9	
85		1		14		4		4		9	
	12				1		1		1		
	64,393		274		7,617		1,825		3,818		10,011
	12,400				407		671		405		
	76,793		274		8,024		2,496		4,223		10,011
	2,160		9		179		59		81		151

Countries and coasts departed for—	With cargo.		In ballast.	
	Vessels.	Registered tons.	Vessels.	Registered tons.
Prussia: Province of—				
Prussia	63	15,492	3	1,281
Pomerania	75	6,556	.....	.....
Schleswig-Holstein, on the Baltic	103	7,156	1	20
Schleswig-Holstein, on the North Sea	112	4,089	10	1,326
Schleswig-Holstein, on the Lower Elbe	35	936	199	18,489
Hanover, eastern part, on the North Sea	10	1,476	7	459
Hanover, on the Lower Elbe	11	1,655	181	9,961
Hanover, western part, including Jade district	43	1,386	2	46
Rhineland	3	191	.....	.....
Oldenburg	41	3,290	32	1,723
Mecklenburg	11	641	.....	.....
Lübeck	1	40	.....	.....
Bremen	362	70,065	282	29,424
Hamburg (Cuxhaven and islands of the Lower Elbe)	2	235	3	86
Total of Germany	872	113,208	720	62,815
European Russia, on the White Sea and Arctic Ocean	3	681	.....	.....
European Russia, on the Baltic	99	39,660	1	1,022
European Russia, on the Black Sea and Sea of Azof	17	18,236	1	1,174
Sweden	182	42,265	17	5,801
Norway with Spitzbergen	179	87,933	41	17,220
Denmark, with Iceland and Faro	116	16,080	2	976
Heligoland	180	37,275	2	254
Great Britain and Ireland	2,180	1,310,437	951	719,628
The Netherlands	279	68,125	15	5,209
Belgium	61	31,396	7	8,905
France, on the Atlantic	93	54,752	5	1,095
France, on the Mediterranean	25	17,455	1	1,051
Spain, on the Atlantic	43	16.531	1	919
Spain, on the Mediterranean, and Gibraltar	55	41,922	.....	.....
Portugal, including the Azores	67	33,863	1	361
Italy and Malta	41	43,258	.....	.....
Austria-Hungary	13	10,772	.....	.....
Roumania	2	1,805	.....	.....
Total of Europe, exclusive of Prussia, etc.	3,635	1,872,446	1,045	763,615
British North America	19	29,612	1	1,302
United States, on the Atlantic	328	461,301	4	5,137
United States, on the Pacific	11	12,068	.....	.....
Mexico, on the Atlantic	27	20,225	.....	.....
Mexico, on the Pacific	10	4,468	.....	.....
Central America, on the Atlantic	.....	.....	1	400
Central America, on the Pacific	9	2,801	.....	.....
West Indies	70	79,762	1	1,102
South America, on the Atlantic, north of Brazil	59	15,271	.....	.....
Brazil	172	146,469	.....	.....
South America, on the Atlantic, south of Brazil	69	59,575	1	53
Chili	73	76,301	.....	.....
South America, on the Pacific, exclusive of Chili	21	10,178	.....	.....
Cape Colony, with Natal	5	1,531	.....	.....
Africa, on the Atlantic	70	66,134	.....	.....
Africa, on the Indian Ocean	10	3,866	.....	.....
Asia, on the Mediterranean and Black Seas	1	1,019	.....	.....
East India and East Indies	14	14,928	.....	.....
China	32	39,695	1	294
Japan	17	31,964	.....	.....
The rest of Asia	4	3,317	.....	.....
Australia and Pacific Islands	36	27,008	.....	.....
Total of non-European countries	1,057	1,107,493	9	8,288
RECAPITULATION.				
Germany	872	113,208	720	62,815
The rest of Europe	3,635	1,872,446	1,045	763,615
Non-European countries	1,057	1,107,493	9	8,288
Vessels with cargo	5,564	.....	.....	.....
Vessels in ballast	.....	.....	1,774	.....
Total of vessels	.....	.....	.....	.....
Tonnage in registered tons of vessels laden	.....	3,093,147	.....	.....
Tonnage in registered tons of vessels in ballast	.....	.....	.....	834,718
Tonnage in registered tons of all vessels	.....	.....	.....	.....
Crews of all vessels	.....	.....	.....	.....

Total.		Steam-ships.		Crews of all vessels.	Under German flag. Home port in —					
					Hamburg.		Bremen.		Lübeck.	
Vessels.	Registered tons.	Vessels.	Registered tons.		With cargo.	In ballast.	With cargo.	In ballast.	With cargo.	In ballast.
66	16,773	42	15,075	645	6	1	.....	.....	.....	.....
75	6,556	8	2,774	307	5	.....	.....	.....	.....	.....
104	7,176	20	3,685	386	10	.....	.....	.....	.....	.....
122	5,415	1	750	315	6	.....	.....	.....	.....	.....
234	19,425	2	223	813	2	7	.....	3	.....	.....
17	1,935	.....	.....	51	.....	.....	6	.....	.....	.....
192	11,616	6	2,012	591	.....	14	3	.....	.....	.....
45	1,432	.....	.....	101	.....	.....	.....	.....	.....	.....
3	191	.....	.....	10	.....	.....	.....	.....	.....	.....
73	5,013	5	2,285	242	2	.....	.....	1	.....	.....
11	641	.....	.....	35	.....	.....	.....	.....	.....	.....
1	40	.....	.....	3	.....	.....	.....	.....	.....	.....
644	99,489	227	21,132	3,101	1	.....	304	240	.....	.....
5	321	2	235	23	1	1	.....	.....	.....	.....
1,592	176,023	313	48,171	6,623	33	23	313	244	.....	.....
3	681	.....	.....	22	.....	.....	.....	.....	.....	.....
100	40,682	84	37,255	1,316	42	.....	2	.....	.....	.....
18	19,410	18	19,410	396	9	.....	.....	.....	.....	.....
199	48,066	107	36,501	1,870	26	.....	3	1	.....	.....
220	105,153	162	87,576	3,182	1	.....	.....	1	.....	.....
118	17,056	24	12,526	674	11	1	.....	.....	.....	.....
182	37,529	169	37,135	1,862	162	.....	.....	.....	.....	.....
3,131	2,030,065	2,840	1,933,227	55,171	395	303	.....	12	.....	.....
294	73,334	194	66,970	3,172	3	.....	.....	.....	.....	.....
68	40,301	64	40,026	1,249	51	2	2	.....	.....	.....
98	55,847	79	52,966	1,753	.....	1	.....	.....	.....	.....
26	18,506	26	18,506	539	25	.....	.....	.....	.....	.....
44	17,450	26	14,810	640	.....	.....	.....	.....	.....	.....
55	41,922	55	41,922	1,162	.....	.....	.....	.....	.....	.....
68	34,224	68	34,224	1,127	1	1	.....	.....	.....	.....
41	43,258	40	42,960	902	40	.....	.....	.....	.....	.....
13	10,772	13	10,772	266	13	.....	.....	.....	.....	.....
2	1,805	2	1,805	40	2	.....	.....	.....	.....	.....
4,680	2,636,061	3,971	2,488,591	75,343	781	308	7	14	.....	.....
20	30,914	19	29,612	563	14	.....	.....	.....	.....	.....
332	466,438	130	271,788	11,776	127	3	73	.....	.....	.....
11	12,068	.....	.....	214	2	.....	.....	.....	.....	.....
27	20,225	12	16,253	527	20	.....	2	.....	.....	.....
10	4,468	.....	.....	109	3	.....	.....	.....	.....	.....
1	400	.....	.....	9	.....	.....	.....	.....	.....	.....
9	2,801	.....	.....	80	1	.....	.....	.....	.....	.....
71	80,864	54	76,379	1,966	40	1	1	.....	.....	.....
59	15,271	2	2,606	484	15	.....	5	.....	.....	.....
172	146,469	95	128,555	4,338	81	.....	1	.....	1	.....
70	59,628	29	41,795	1,378	25	1	.....	.....	.....	.....
73	76,301	40	48,337	1,854	67	.....	.....	.....	.....	.....
21	10,178	.....	.....	239	10	.....	.....	.....	.....	.....
5	1,531	.....	.....	43	1	.....	.....	.....	.....	.....
70	66,134	55	61,607	1,670	33	.....	.....	.....	.....	.....
10	3,866	3	2,166	131	5	.....	.....	.....	.....	.....
1	1,019	1	1,019	23	.....	.....	.....	.....	.....	.....
14	14,928	2	3,971	262	6	.....	1	.....	.....	.....
33	39,989	28	36,597	973	24	1	.....	.....	.....	.....
17	31,964	17	31,964	638	.....	.....	.....	.....	.....	.....
4	3,317	4	3,317	74	.....	.....	.....	.....	.....	.....
36	27,008	.....	.....	510	12	.....	2	.....	.....	.....
1,066	1,115,781	491	755,966	27,861	486	6	85	.....	1	.....
1,592	176,023	313	48,171	6,623	33	23	313	244	.....	.....
4,680	2,636,061	3,971	2,488,591	75,343	781	308	7	14	.....	.....
1,066	1,115,781	491	755,966	27,861	486	6	85	.....	1	.....
.....	.....	*4,775	3,292,728	.....	1,300	.....	405	.....	1	.....
.....	.....	.....	.....	.....	.....	337	.....	258	.....	.....
7,338	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	1,079,980		159,678			241
.....	.....	.....	.....	.....	270,674		43,922		.....	.....
.....	3,927,865	.....	.....	.....	1,350,654		203,600			241
.....	.....	.....	.....	109,827	37,358		4,656			8

*Among which, with cargo, 3,701 steamers of 2,595,194 registered tons; in ballast, 1,074 steamers of 697,534 registered tons.

Countries and coasts departed for—	Under German flag. Home port in —					
	Prussia.		Mecklenburg.		Oldenburg.	
	With cargo.	In ballast.	With cargo.	In ballast.	With cargo.	In ballast.
Prussia: Province of—						
Prussia	53	1				
Pomerania	64		1		1	
Schleswig-Holstein, on the Baltic	92	1				
Schleswig-Holstein, on the North Sea	103	7			1	
Schleswig-Holstein, on the Lower Elbe	29	133		4	4	18
Hanover, eastern part, on the North Sea	1	6			2	
Hanover, on the Lower Elbe	7	139				8
Hanover, western part, including Jade district	40	2			3	
Rhineland						
Oldenburg	24	29			13	2
Mecklenburg	8		2		1	
Lübeck	1					
Bremen	26	19			25	16
Hamburg (Cuxhaven and islands of the Lower Elbe)	1	2				
Total of Germany	449	339	3	4	50	44
European Russia, on the White Sea and Arctic Ocean	2		1			
European Russia, on the Baltic	24				1	
European Russia, on the Black Sea and Sea of Azof	2					
Sweden	52		1		1	
Norway with Spitzbergen	11	1			1	
Denmark, with Iceland and Faro	74	1				
Heligoland	8			2		
Great Britain and Ireland	60	47	3	1	1	3
The Netherlands	23	7	1			
Belgium						
France, on the Atlantic	9		1			
France, on the Mediterranean						
Spain, on the Atlantic	4	1			1	
Spain, on the Mediterranean, and Gibraltar						
Portugal, including the Azores					36	
Italy and Malta						
Austria-Hungary						
Roumania						
Total of Europe, exclusive of Prussia, etc.	269	57	7	3	41	3
British North America						
United States, on the Atlantic	20		10		1	
United States, on the Pacific						
Mexico, on the Atlantic					2	
Mexico, on the Pacific	1		1		2	
Central America, on the Atlantic						
Central America, on the Pacific	3				2	
West Indies	4				4	
South America, on the Atlantic, north of Brazil	8				6	
Brazil	10		1		12	
South America, on the Atlantic, south of Brazil	1		4		4	
Chili	1				1	
South America, on the Pacific, exclusive of Chili	2				6	
Cape Colony, with Natal	1					
Africa, on the Atlantic	3				2	
Africa, on the Indian Ocean					2	
Asia, on the Mediterranean and Black Seas						
East India and East Indies	1				1	
China	1				2	
Japan						
The rest of Asia	2					
Australia and Pacific Islands	2		2		4	
Total of non-European countries	60		18		51	
RECAPITULATION.						
Germany	449	339	3	4	50	
The rest of Europe	269	57	7	3	40	
Non-European countries	60		18		51	
Vessels with cargo	778		28		142	
Vessels in ballast		396		7		47
Total of vessels						
Tonnage in registered tons of vessels laden		92,531		10,974		40,070
Tonnage in registered tons of vessels in ballast		32,975		2,182		4,685
Tonnage in registered tons of all vessels		125,506		13,156		51,755
Crews of all vessels		5,136		341		1,518

Under foreign flag.

Russian.		Swedish.		Norwegian.		Danish.		British.		Dutch.	
With cargo.	In ballast.	With cargo.	In ballast.	With cargo.	In ballast.	With cargo.	In ballast.	With cargo.	In ballast.	With cargo.	In ballast.
		1			1	1				2	
						3				1	
										1	
					1					1	2
	1		1		4		14		6		5
										1	1
			3		2		2		3		10
										3	
										2	
					1				2	6	4
	1	1	4		9	4	16		11	17	22
1	1					25		2		2	
1								5	1		
1		78	14		2	15		2		3	
				157	39	3		3		3	
				2		27				2	
								10			
	1	1	2	2	22	1	4	1,704	541	10	
						2		5	3	245	4
						1				6	4
								5		2	
									1		
				1		1		8		2	
								1			
								30			
3	2	79	16	162	63	75	4	1,775	546	275	8
					1			4			
3		3	1	44		3		30		1	
								9			
				1		2					
						3					
			1								
						3					
		2				4		1			
				3		15		4		3	
1		3		12		11		30		8	
		2		14		2		16			
						2		2			
						2		1			
		1				2					
				6				22			
						3					
								1			
								5			
								5			
				1				16			
				1				1			
		1		2				9		1	
4		12	2	84	1	52		156		13	
	1	1	4		9	4	16		11	17	22
3	2	79	16	162	63	75	4	1,775	546	275	8
4		12	2	84	1	52		156		13	
7		92		246		131		1,931		305	
	3		22		73		20		557		30
	3,447		33,059		139,163		40,954		1,263,777		73,435
	1,987		6,592		32,956		4,583		411,769		7,109
	5,434		39,651		172,119		45,537		1,675,546		80,544
	135		1,373		4,544		1,540		45,343		3,364

Countries and coasts departed for—	Under foreign flag.			
	Belgian.		French.	
	With cargo.	In ballast.	With cargo.	In ballast.
Prussia: Province of—				
Prussia				
Pomerania				
Schleswig-Holstein, on the Baltic				
Schleswig-Holstein, on the North Sea				
Schleswig-Holstein, on the Lower Elbe				
Hanover, eastern part, on the North Sea				2
Hanover, on the Lower Elbe				
Hanover, western part, including Jade district				
Rhineland				
Oldenburg				
Mecklenburg				
Lübeck				
Bremen				
Hamburg (Cuxhaven and islands of the Lower Elbe)				
Total of Germany				2
European Russia, on the White Sea and Arctic Ocean				
European Russia, on the Baltic				
European Russia, on the Black Sea and Sea of Azof				
Sweden				
Norway with Spitzbergen				
Denmark, with Iceland and Faro				
Heligoland				
Great Britain and Ireland			1	2
The Netherlands				1
Belgium	1			1
France, on the Atlantic			76	4
France, on the Mediterranean				
Spain, on the Atlantic				
Spain, on the Mediterranean, and Gibraltar				
Portugal, including the Azores				
Italy and Malta				
Austria-Hungary				
Roumania				
Total of Europe, exclusive of Prussia, etc.	1		77	8
British North America			1	
United States, on the Atlantic			1	
United States, on the Pacific				
Mexico, on the Atlantic				
Mexico, on the Pacific				
Central America, on the Atlantic				
Central America, on the Pacific				
West Indies				
South America, on the Atlantic, north of Brazil				
Brazil				
South America, on the Atlantic, south of Brazil				
Chili				
South America, on the Pacific, exclusive of Chili				
Cape Colony, with Natal				
Africa, on the Atlantic	4			
Africa, on the Indian Ocean				
Asia, on the Mediterranean and Black Seas				
East India and East Indies				
China				
Japan				
The rest of Asia				
Australia and Pacific Islands				
Total of non-European countries	4		2	
RECAPITULATION.				
Germany				2
The rest of Europe	1		77	8
Non-European countries	4		2	
Vessels with cargo	5		79	
Vessels in ballast				10
Total of vessels				
Tonnage in registered tons of vessels laden		5,085		54,937
Tonnage in registered tons of vessels in ballast				5,666
Tonnage in registered tons of all vessels		5,085		60,603
Crews of all vessels		135		18,08

Under foreign flag.

Spanish.		Portuguese.		Italian.		Austrian.		Greek.		North American.	
With cargo.	In ballast.	With cargo.	In ballast.	With cargo.	In ballast.	With cargo.	In ballast.	With cargo.	In ballast.	With cargo.	In ballast.
								1			
					1						
1											
1					1			1			
1				1	8		2		3		
26											
54											
				1							
81				2	8		2		3		
				3		3				6	
14											
		1									
				1							
										1	
14		1		4		3				7	
1					1			1			
81				2	8		2		3		
14		1		4		3				7	
96		1		6		3		1		7	
					9		2		3		
76,228		274		2,641		1,703		405		7,565	
				5,383		822		3,413			
76,228		274		8,024		2,525		3,818		7,565	
2,134		9		179		58		71		117	

TABLE No. III.—*Sea-going vessels arrived.*

Arrived.	1885.		1886.		1887.	
	Vessels.	Registered tons.	Vessels.	Registered tons.	Vessels.	Registered tons.
From German ports	1,338	198,262	1,468	197,801	1,755	229,634
From Great Britain (coalers)	776	538,076	815	558,325	809	555,292
From Great Britain (other vessels)	2,076	1,259,184	2,046	1,282,110	2,036	1,287,355
From other European ports	1,536	666,438	1,605	742,171	1,680	743,217
From America	886	868,469	823	848,920	836	894,763
From Africa	71	58,198	60	50,882	64	59,144
From Asia and Australia	107	115,485	96	111,783	128	150,829
Total	6,790	3,704,112	6,913	3,791,992	7,308	3,920,234
Among which were—						
Vessels with cargo	5,856	3,443,645	5,920	3,526,955	6,338	3,697,304
In ballast	934	260,467	993	265,037	970	222,930
Sailing vessels	2,312	607,182	2,259	588,366	2,535	633,082
Steam-ships	4,478	3,096,930	4,654	3,203,626	4,773	3,287,152
Percentage of sailing vessels	34.1	16.4	32.7	15.5	34.7	16.1
Percentage of steam-ships	65.9	83.6	67.3	84.5	65.3	83.9
Average loading capacity of sailing vessels	.....	263	.....	260	.....	250
Average loading capacity of steam-ships	.....	692	.....	688	.....	689

Sea-going vessels departed.

Sailed.	1885.		1886.		1887.	
	Vessels.	Registered tons.	Vessels.	Registered tons.	Vessels.	Registered tons.
For German ports	1,246	138,763	1,276	148,278	1,592	176,023
For Great Britain and Ireland	3,059	1,982,059	3,032	1,948,878	3,131	2,030,065
For other European ports	1,441	555,157	1,511	598,586	1,549	605,996
For America	826	820,226	867	880,387	876	926,025
For Africa	96	71,976	89	63,427	85	71,531
For Asia and Australia	130	144,213	131	147,289	105	118,225
Total	6,798	3,712,394	6,906	3,786,845	7,338	3,927,865
Among which were—						
Vessels with cargo	5,142	2,895,489	5,320	2,985,020	5,564	3,093,147
Vessels in ballast	1,656	816,905	1,586	801,825	1,774	834,718
Sailing vessels	2,315	616,721	2,264	592,901	2,563	635,137
Steam-ships	4,483	3,095,673	4,642	3,193,944	4,775	3,292,728
Percentage of sailing vessels	34.1	16.6	32.8	15.7	34.9	16.2
Percentage of steam-ships	65.9	83.4	67.2	84.3	65.1	83.8

TABLE No. IV.—*Value of imports into Hamburg.*

Seaward from—	1885.	1886.	1887.
	Marks.	*Marks.*	*Marks.*
Non-European countries	356,395,170	344,800,270	416,588,590
Great Britain and Ireland	394,176,400	394,594,220	417,145,140
The rest of Europe	182,460,560	197,427,650	215,349,600
Total	933,032,130	936,822,140	1,049,083,260
From and via Altona	58,505,910	53,109,360	59,523,980
Seaward, including Altona	991,538,040	989,931,500	1,108,607,240
By railroads	689,073,170	734,005,220	789,732,090
From the Upper Elbe	240,960,210	228,169,330	241,742,950
From various channels	124,335,400	128,609,910	145,673,770
Total	2,045,906,820	2,080,715,960	2,285,756,050
Besides, in coined bullion	101,053,330	49,635,180	93,511,780

AGRICULTURE, INDUSTRY, AND TRADE IN SILESIA.

EXPORTS.

The return of declared exports from this consular district to the United States for the fiscal year ending June 30, 1888, showed an increase of $314,382.51 over the exports of the preceding twelve months, although one of the principal articles of export for the last few years, beet sugar, has not been shipped to the United States from this district since the September quarter, 1887. In linen and cotton fabrics the increase was $212,866.26; in woolen cloths, $61,724.98; in silk-mixed umbrella stuffs, $112,624.76; in porcelain ware, $32,492.92; and in cellulose and wood-pulp, $25,813.07.

THE CROPS.

The cereal crops of 1888 have fallen below those of 1887, both in quality and quantity of grain, as also of straw, owing, in a great measure, to the cold and wet weather of May, June, and July, and to the wide-spread inundations of August. Sugar-beets promise a fair yield, and of potatoes a greater amount will be produced than last year, but it is feared that the rot, which has appeared in a number of places, will diminish the value of the tuber crop. Of both clover and meadow hay, less was gathered than last year. The estimates for 1888 are as follows: Wheat, 90 per cent.; rye, 75; barley, 82; oats, 89; potatoes, 95.40; clover hay, 78.91; and meadow hay, 76.34. In 1887 wheat returned 98 per cent. of a good crop; rye, 93; barley, 96; oats, 86; potatoes, 81; clover hay, 100; and meadow hay, 96. The average price of wheat during 1887 was: White, $1.98 per hundred-weight; yellow, $1.90. Rye, $1.48. The wholesale price of wheat flour during the year averaged $2.88 per hundred-weight, exclusive of sack; rye flour, $2.28.

CHAMBER OF COMMERCE OPINIONS.

The chamber of commerce annual reports all concur in the opinion that the year 1887, so far as the material prosperity of tradesmen, manufacturers, and agriculturists is concerned, was no improvement on its predecessors. Individual reports made to the Breslau chamber during the year establish the fact that a number of branches of trade and industry were more active during a part, at least, of 1887 than they had been for some time past; but this improvement brought better prices, and was of some duration only in a few cases. By means of conventions to regulate prices and limit production some of the larger industries have succeeded, however, in placing themselves upon a better basis. But the lesser industries, the middle-men, and the retailers, continue to complain of overcompetition and depressed prices. Stimulating reports from abroad, and the fear of a fresh increase of the import duty upon breadstuffs, animated the grain trade in the second quarter of the year, but the transactions here remain within narrow bounds, and although the German markets were overloaded with foreign grain before the

new duties went into effect very little of it was brought into this province. Linen and cotton mills were enabled to keep their operatives employed during the entire year, but the complaints of the manufacturers that the margin for profit is very small must be conceded to be well-grounded. The linen spinners have been obliged to make occasional abatements in prices in order to effect sales, while on the other hand the cotton spinners, at least in the early months of the year, and so long as their supply of the raw material lasted, were working at a fair profit. The iron industry succeeded in placing itself upon a better footing in 1887. The establishment of an "Upper Silesian League for Joint Sales" and the "General German Syndicate" contributed materially to this result. These combinations are not intended to limit production, but rather to fix the amount which may be sold by individual works during a given period. By this means, however, overproduction is prevented and prices are kept within paying limits.

According to the Liegnitz chamber of commerce neither the industrial, commercial, nor agricultural population of Lower Silesia has reason to be elated with the results of the year 1887. The constant tendency to raise the duty on imports has latterly confined the export field to Austria-Hungary, Spain, the United States, and Australia. In grain little business has been done except with domestic millers. The potato starch factories produced the same amount as last year, and disposed of it at the same prices. The sugar factories worked 25 per cent. less beets than in the previous year, and realized a fair profit owing to the saccharine quality of the beets. At the beginning of the year raw wool took an upward turn, but soon receded again in consequence of the prevailing fear of war. The woolen cloth industry languished from the same reason. The wool hat manufacture was confined mainly to the production of a cheaper sort, suitable for certain parts of Germany and for export to Japan, Calcutta, and the La Plata states.

The Liegnitz board of trade report is pitched in a still more lugubrious key. No one, it declares, has prospered from the pursuit of agriculture alone, while many farmers have been living partly on the earnings of former years, and others have been aided by the loans at low interest now so easily obtained. It can not be denied that in the last decade the agriculturists have not held their own, and that in the better localities the gain from land is one-third less and in the poorer localities one-half less than in former years. The land has even decreased in value from 20 to 25 per cent., as compared with twenty or twenty-five years ago. In spite of this a decrease in the number of work-people or a reduction of wages has not taken place; in individual instances even a slight increase has been obtained by the employés. A bad symptom among the open-air workers is the steadily increasing consumption of alcohol.

The Gorlitz chamber of commerce says: Wool opened at the beginning of the year briskly, but in a short time dropped, and many sales thereafter were made at a loss. In woolen cloths the home business was fair, the exports to Spain and Italy less than formerly, and from France, probably for

political reasons, scarcely any orders are now received. Holland and Scandinavia still take large supplies, but trade with Greece and Turkey is almost at a stand-still. Sales of silk-mixed fabrics for umbrella makers were not so large as had been expected. (Of this Gorlitz specialty, the exports to the United States, during the calendar year 1887, amounted to $273,670.72.) The flour mills have now for some years worked only for the home demand.

In Sorau, according to the chamber of commerce, the high hopes entertained by the textile manufacturers were fully realized in the second half of the year. As regards the linen and cotton industry in particular, increased consumption at home and an active demand from the United States gave the weavers ample employment, even the house hand-loom weavers not losing by the rivalry of the factory power looms. Damasks, table linens, and towelings were the chief articles of export to the United States. Flax spinning, however, owing to the sinking of the prices of flax yarns, was not remunerative; the cotton spinners, on the contrary, had no reason to complain.

GERMANY'S GRAIN IMPORTS.

The excess of cereal imports over exports were—

Year.	Cwt.
1884	523,175.66
1885	427,741.02
1886	171,331.02
1887	396,681.38

The principal sources of supply were, as formerly, Austria-Hungary, Russia, and the United States. By improving her transportation facilities Russia has increased her grain export to Germany, but Austria still leads in the supply of barley. The export of German potatoes has fallen off greatly, England taking but a limited amount compared with formerly, and the shipments to other countries being only sporadic and not in great amounts. The bulk of the crop has, therefore, in recent years been converted into alcohol and starch.

In the first half of the calendar year 1888 the imports into the Empire were as follows:

	Cwt.
Rye	1,891,636
Wheat	2,225,702
Oats	1,322,816
Buckwheat	157,076
Barley	2,602,592
Maize	556,902
Malt	626,116
Bran and rice waste	3,233,670

PRODUCTS OF MINES AND FURNACES.

The amount of coal mined in Silesia during the year was 16,187,078 tons, against 15,996,326 tons the previous year. There were sold 14,678,972 tons, yielding $14,561,251.01.

Ores were produced as follows:

	Tons.	Value.
Iron	650,731	$606,943
Zinc	722,018	1,318,945
Lead	28,697	875,077
Arsenic	323	4,732
Sulphur	6,327	16,547

The products of the smelteries were:

			Value.
Charcoal pig-iron	tons	831	$24,033
Stone-coal and coke pig-iron	do	392,600	4,461,542
Spelter	do	82,643	5,423,190
Pig-lead	do	22,279	1,214,015
Litharge	do	2,879	158,988
Precipitated copper	do	60	114,715
Silver	kilos	12,370	387,290
Gold	do	0.7527	490
Cadmium	do	7,310	11,542
Arsenic	tons	474	21,792
Sulphuric acid	do	42,162	373,846
Copperas, vitriol	do	1,491	16,099
Ocher	do	84	1,257

Just before the increased duties on iron imported into Russia went into effect in May, 1887, large quantities of pig-iron were sent to that country from Upper Silesia, the price being about 58 cents per hundred-weight. In June of the same year a syndicate purchased the supply on hand, together with the entire output for the rest of the year at 56 cents per hundred-weight. A remarkable simultaneous explosion of all the boilers in one of the most extensive works having placed three large furnaces out of operation, the syndicate raised the price of pig-iron so enormously that consumers were obliged to combine also, and the purchase of large amounts of ore abroad and the blowing-in of two new furnaces soon brought the syndicate to terms. For 1888, however, the "League of Upper Silesian Rolling-Mills" agreed to take all the pig-iron made for sale in the district at a uniform price of 59⅓ cents per hundred-weight. The prices for pig-iron, as well as rolled iron, were thus fixed at a remunerative rate for a year at least.

At the end of last year there were only twenty-two zinc-ore mines worked in Silesia, against thirty at the end of 1886. One of the disused mines was (not more than fifteen years ago) one of the most productive sources of calamine in the province. The twenty-two mines left working employed the same number of work-people, however, as the thirty did in the previous year, and the production of both calamine and blende was greater than in 1886. The number of tons mined was as follows:

Year.	Calamine.	Blende.	Lead ores.	Pyrites.
1887	573,485	187,507	28,568	2,980
1886	398,490	172,780	26,313	1,585

The production of spelter in Upper Silesia was nevertheless about 200 tons less than in 1886, being limited by conventions with the other zinc producers of the continent and England. Twenty smelteries produced 82,608 tons. In the first half of the year the prices, owing to war rumors and other causes, were greatly depressed, but about midsummer rapidly advanced, and large orders from England in November and December brought them up to $4.78 per hundred-weight, delivered at Breslau. To-day it can be bought at $4.12, delivered at the works.

Lead experienced little change in the early part of the year, falling, however, gradually to $2.70 per hundred-weight, from which price it soon recovered. In December, a lead syndicate having been formed, the price rose rapidly until it reached $3.57 per hundred-weight.

The Silesian zinc rolling-mills produced 28,000 tons of sheet-zinc during the year. Sheet-zinc not being favored with the low freight rates enjoyed by the metal in its raw state, and the transportation by water being seldom practicable, the western manufacturers and producers continue to have a great advantage over those of Silesia in the world's markets.

BEET SUGAR.

In the production of raw sugar the Silesian factories consumed 22,153,750 hundred-weight of beets, 8.32 hundred-weight of beets producing 1 hundred-weight of sugar. The amount of beets consumed by all the sugar-mills in the Empire was 166,133,424 hundred-weight (against 208,053,736 hundred-weight two years previously), and the total amount of raw sugar produced, 19,968,158 hundred-weight. The total imports of sugar were 63,914 hundred-weight; total exports 12,767,794 hundred-weight.

GLASSWARE.

Colored and decorated glassware manufacturers kept their workmen employed nearly the entire year. Prices, however, remained depressed. The export to the United States was active, but the competition of Bohemian glass-makers, whose labor and material are cheaper, prevents any considerable expansion of the export trade.

PETROLEUM.

The fluctuations in the price of American petroleum were, in some instances, disastrous to wholesale dealers here, but the low prices ruling during the summer had the effect of inducing a greater number of large transactions than were made in the previous year. Prices varied from $6.07 per 100 kilograms (2 hundred-weight) in January and December to $5.24 in May and October. The import of Caucasian petroleum into Silesia, under the name of "Nobel petroleum," amounted to about 800 tank cars, holding 52,000 barrels, or 8,000,000 kilograms. The prices varied from $1.98 to $2.38 per 100 kilometers net at Russian frontier, and from $4.82 to $5.48, freight and duty paid, in Breslau. Of the tank cars that crossed the frontier 350 came through to Breslau.

VEGETABLE OILS.

The rape-seed and linseed oil factories have been well supplied with raw material up to the beginning of the present fiscal year, and the demand for their products has been fair. The oil mills in this city, which have formed a combination, produced in 1887 and 1888 116,300 hundred-weight of oil and 189,200 hundred-weight of oil-cake; 322,000 hundred-weight of oil seeds were consumed. The net earnings were $57,152. Rape-seed oil from these factories is exported to the United States.

ODER RIVER COMMERCE.

The principal articles of river transportation were:

From Breslau.	Cwt.	To Breslau.	Cwt.
Coal	4,500,410	Chemicals	104,100
Chemicals	28,046	Petroleum	381,075
Iron, all descriptions	37,697	Resin, etc	36,670
Zinc, in plates and rolled	359,155	Iron, all descriptions	174,898
Lead	80,840	Grain	95,050
Grain	234,035	Oil and oil-cake	3,500
Oil and oil-cake	66,731	Flour	7,100
Mill manufactures	304,170	Roofing paper	10,810
Malt	17,840	Stone and brick	404,930
Alcohol	133,100	Wood	50,410
Sugar	677,740	Pyrites	335,603
Molasses	80,625	Herrings	35,950
Stone, brick, etc	27,800	Salt	14,680
Wood	18,820	Cotton	1,500
Resin, pitch, tar	500	Miscellaneous	1,877,908
Miscellaneous	339,160		

As river freight down stream there was sent in addition 355,778 tons of goods brought hither by rail and transshipped a few miles below Breslau. This consisted mainly of coal, spelter, raw sugar, lead, iron, barley, malt, cellulose, sheet-zinc, flour, staves, rape-seed, stone, bran, oats, alcohol, cement, sugar beets, etc.—BRESLAU, *September 8, 1888.*

HENRY DITHMAR,
Consul.

EXPORTS AND IMPORTS OF THE RUSSIAN EMPIRE.

The following is a summary of a recent report of the Russian ministry of finance on the exports and imports of the Empire, published in the Journal de St. Petersburg of August 25, September 6, 1888:

The information furnished by the Journal du Ministere des Finances, relating to the custom-house receipts of the first six months of the current year, has elicited comments from all the organs of our press. The Nouvelles makes the following conclusions:

"During the first half of the present year Russian products have been exported abroad for the sum of 348,430,000 rubles, which, compared with the corresponding period of last year, gives an increase of 111,361,000 rubles, that is, of 32 per cent.; while the imports, esti-

mated at 144,138,000 rubles, have been less than those of last year by 9,552,000 rubles, that is 62 per cent. The improvement shown these last years in our commercial statement has never before been so marked, our exportations during the six months having exceeded our imports by 204,000,000 rubles, that is, by nearly 150 per cent.

"This increase in exports has taken place chiefly during the last three months, the difference in favor of the current year having been: in April, 27,000,000; in May, 32,700,000; and in June, 30,000,000. The greatest increase has been noticed in the exportation of alimentary products, especially of cereals, of which, in these six months, 83,600,000 more than during the first six months of last year, have been exported. After these come raw materials and half-worked articles (increase of 19,700,000 rubles). The exportation of manufactured articles has also increased by 66 per cent., from 4,777,000 rubles. The exportation of cattle has more than doubled (6,324,000 instead of 3,065,000 rubles).

"Excepting in the month of February, when there was a slight falling off, the exportation of alimentary products has steadily increased during these six months. In January the increase in this group of products showed 7,750,000 rubles; in March, 10,500,000 rubles; in April, 21,000,000 rubles; in May, 23,333,000 rubles; and in June, 21,500,000 rubles. Cereals held the first place—in six months, exports to the value of 198,670,000 rubles, instead of 118,500,000 rubles in 1887, 76,500,000 rubles in 1886, 147,250,000 rubles in 1885, and 136,000,000 rubles in 1884. Thus the exportation of cereals during the first six months of the present year leaves far behind it that of a series of former years.

"The only decrease in exportation was in maize, buckwheat, and sorghum. The exportation of wheat increased three-fold; that of oats, compared with that of last year, doubled, and compared with 1886 is six times as great. Almost the same may be said of barley. Of rye, only 5.6 per cent. more; of 12 per cent. less value (3,000,000 rubles). The price of rye fell more than that of any other product. The exportation of bran doubled, compared with that of 1887, and tripled with that of 1886.

"The increase in the exportation of wheat is due to the demands from England, France, and Belgium, while Austria-Hungary ordered none. Holland takes the lead in the orders for rye, even over Germany, since last year. In 1888 barley is sent in large quantities to France, whereas before the demand was insignificant. Germany ordered more than ever. Oats were in greater demand in all the countries where it was sold until now. An increase is also to be pointed out in the exportation of eggs, which, representing a value of 2,500,000 rubles in 1886, and of 3,500,000 rubles in 1887, reached 6,500,000 rubles in 1888; as also a greater demand for meat, caviar, and preserves of all kinds.

"In the group of raw materials and half-worked articles, there was a greater exportation of flax—3,250,000 poods (the pood, 36 pounds) in 1886, 5,333,000 in 1887, 7,800,000 in 1888. The value increased in the same proportion for the three years—17,700,000, 29,300,000, and 42,300,000 rubles. Flax-seed was also exported in larger quantities than before, as almost every other kind of oleaginous seed. The exportation of naptha also made progress—1,200,000 poods in 1886, 1,500,000 in 1887, and 1,900,000 in 1888. Silk and bones, on the other hand, fell off, as also unworked metals, but the value of metals exported increased compared with the preceding year. Although the quantity of metals exported decreased from 73,000 to 27,700 poods, in value they increased from 627,000 to 700,000 rubles.

"In the group of animals the exportation of horses gained the most—in 1887 it represented only the value of 500,000 rubles, while this year it amounted to 3,000,000. In number, also, there were three times as many horses exported as during last year. The exportation of poultry and of game doubled.

"As to manufactured articles, the exports increase from year to year. During the first six months of 1885 the value of these exports was but 2,686,000 rubles, whereas in 1887 it already amounted to 7,293,000 rubles, and in 1888 it reached 12,064,000 rubles. The greatest increase is remarked in the exportation of articles in linen, clothing, and fur coats, woolen stuffs, linen cloth, and silk, articles in leather and caoutchouc, as also objects in silver, etc.

"It is altogether different with the imports—a slight increase of 780,000 rubles in the group of manufactured articles, in every other case a considerable diminution. The importation of alimentary products decreased by 3,617,000 rubles, compared with 1887. That of tobacco decreased more than one-half, without counting that the value declined still more, falling from 1,829,000 rubles in 1887 to 671,000 rubles. That of imported drinks fell also from 4,432,000 rubles in 1886 to 3,305,000 rubles. Less salt, herrings, cod-fish, oranges, lemons, and other fruits were imported. Without counting vegetables and bread, colonial products increased in importation, as also tea, although the value of the latter decreased. By the European frontier 100,000 poods of tea were imported in the six months, against 89,000 poods in the corresponding period of last year. By the custom-house at Irkoutsk tea was imported as follows: 637,000 poods in 1887; 570,000 poods in 1888.

"The reduction in the importation of raw materials and of half-worked articles amounts this time, compared with the first six months of 1887, to 6,687,000 rubles. In the last year cotton has chiefly contributed to this reduction. In 1887 5,180,000 poods were imported, to the value of 49,465,000 rubles; in 1888 only 4,251,000 poods, valued at 41,834,000 rubles.

"Coal and coke also were imported in less quantities. Cast-iron decreased as follows: instead of 5,130,000 poods in 1887, only 493,000 poods in 1888. It is the same with most of the other metals, as also with vegetable oils. There was an increase in the importation of silk, wool, cotton goods, articles in wood, manures, steel, zinc, indigo, sulphur, etc.

"The importation of cattle diminished by 37,000 rubles. On the other hand, articles in gold and silver, cast-iron, steel, machinery, and tools (especially of agricultural implements), linen, and hemp, as also carriages, books, and watchmakers' goods, were imported in larger quantities than before."

SUGAR AND RICE IN THE FIJI ISLANDS.

The culture and manufacture of sugar is one of, if not the most important industry of this colony, more capital being invested and more labor employed in the sugar industry than in any other branch of business in this group, except, perhaps, cocoa-nuts, which possibly claim a larger investment of money.

There are eleven mills here manufacturing sugar. There are a few small plantations on the rivers, where the cane can be shipped to the mills by boats, that grow cane and sell their crop to the mills.

After careful inquiry from all available sources I have prepared the following table, giving the amount of sugar made, the number of acres of cane required for the output, and the total acreage under cane cultivation:

Mill.	Owners.	Sugar.	Acres required.	Acres under cultivation.
		Long tons.		
Ba	New Zealand Sugar Company	2,000	1,500	2,000
Denba	Wilson Brothers	500	650	812
Dreketi	J. B. Simmonds	15	24	48
Ellington	Mortgage and Agency Company	375	248	304
Holmhurst	Tavinni Sugar Company	360	400	600
Koronivia	Rewa Sugar Company	1,407	1,085	1,200
Mago	Mago Island Company	750	600	800
Nansori	Colonial Sugar Company	6,442	.....	.....
Penang	N. Chalmers	775	320	620
Selia Levu	W. Hunter	268	229	300
Tamanoa	Fiji Sugar Company	1,200	960	1,200
Total	.....	14,092	6,016	7,884

The above gives the amount of sugar shipped out of this colony. There is a local consumption of about 300 tons which is not included in the above table. There are in this colony 110,000 natives, 5,000 coolie Indians, 2,000 Polynesians, and about 2,000 white or Europeans; making a total of 119,000 souls.

I find an average local consumption of 5$\frac{1}{17}$ pounds per capita. But this is not a correct showing, for the reason that the white population use much more than the general average, and the natives very much less than either of the others named. I will add that local consumption is rapidly on the increase.

As to the methods of cultivation, it is as varied as possible between the limits of properly preparing the land and cultivating a crop upon the best principles and simply digging a hole in the ground with a sharp stick, putting in a plant, and then leaving it to the care of nature for the furnishing of the crop. The results are as might be expected. Proper cultivation is sure to give good returns. The contrary, while not a failure, owing to the soil and climate, is not profitable.

Averaging, as well as I am able from the data obtained, I find about 15 tons of cane is raised from 1 acre of ground, at a cost of nearly or quite £8 ($38.93). Also that 10 tons of cane are required for 1 ton of sugar. The amount of cane for the ton of sugar varies in different localities in the group.

At Penang and Ba the average is the best, being about 8 tons of cane for one of sugar, while at Nansori, Koronivia, and Tamanoa it requires from 10 to 13 tons of cane for the same amount of sugar.

All of the sugar made here finds a ready market at Melbourne and Sydney, Australia, and in Auckland, New Zealand. The prices at the different places for the last year were the same, and as follows:

Class A, first white	£20.10...	$99.75
Class B, bright yellow	15.00...	73.00
Class C, counter	14.5.....	68.38
Class D, coarse	11.5.....	54.73

The larger firms ship in their own vessels, Ba sending her output to Auckland, and Nansori, Koronivia, and Tamanoa to Sydney. The other mills ship by the United States Steam-ship Company's steamers that make regular trips between colonial ports and this group and furnish ample accommodation for carrying their product. They charge £1.10 ($7.30) special rates to either of the ports named.

The price paid for sugar at the mills for local consumption is £21.10 ($104.63) for class A, and £16 ($77.86) for class B. The other grades are all exported. There are no taxes upon sugar or cane lands. Sugar machinery of all kinds is exempt from duty.

As to rice, experiment has demonstrated the fact that rice can be grown at a profit in some of these islands, but as yet it has only been grown as an experiment. A duty of £2 ($9.73) per ton is collected upon all rice imported.—LEVUKA, FIJI, *August 3, 1888.*

ANDREWS A. ST. JOHN,
Commercial Agent.

AGRICULTURAL MACHINERY IN VICTORIA.

From January 1, 1888 to the 15th inst., there have passed through the custom-house of this port agricultural machinery to the declared value of $12,139, and upon this value duties were levied of 35 per cent., except in cases of shovels and spades.

Report of the imports (from January 1 to September 15, 1888,) into British Columbia of agricultural machinery from the United States, landed at the port of Victoria, B. C.

No. of machines.	Description of machines.	Declared total value.	Custom-house value.	Rate of duty.	American makers' prices,* as compiled from catalogues.	Prices at which machine is sold in Victoria, B. C.
				Per cent.		
3	Twine binding attachments.....	$600	$600	35	$210 to $225.00	$250 to $260.00
47	Hand seed grain drills.....	355	355	35	7.50	9 to 17.50
16 doz.	Forks (hay, straw, manure, and spading).....	146	146	35	.....	per doz., 15.00
48	Harrows.....	915	915	35	18 to 27.00	35.00
	Seed-drills.....			35	90 to 145.00	75 to 115.00
12	Self-binding harvesters	2,020	2,020	35	210 to 225.00	260.00
223	Hoes (garden and corn)	77	77	35	.....	.....
10	Knives (hay and corn).....	19	19	35	.....	.....
21	Mowing-machines.....	1,197	1,197	35	80.00	85 to 90.00
121	Sulky plows	1,176	1,176	35	70 to 95.00	60 to 107.50
	Walking plows.....			35	10 to 24.00	20 to 25.00
487	Rakes, steel (horse and hand)..	562	562	35	†35 to 37.50	†45.00
2	Reapers	275	275	35	125 to 130.00	120 to 150.00
240	Scythes (cast-steel).....	96	96	35	.....	.....
4,870	Shovels and spades.....	2,473	2,473	$1 per doz. and 25	.....	.....
.....	Parts of machinery for repairs..	2,228	2,228	35	.....	.....
		12,139	.....	.....	.....	.....

* Less 25 per cent. discount; terms, ninety days. † Horse-rakes.

The consular agent at Vancouver, in response to my note of inquiry, reports:

There have been no agricultural implements entered at the customs of this port from the United States since Vancouver has been made a port of entry — fifteen months. At the port of Westminster there have been entered six plows only, from San Francisco, Cal., during the the past twelve months — one plow valued at $27 and five plows valued at $32 each; total value, $187.

The agent at Nanaimo reports "nothing." The small demand there is supplied from this town.

There are four firms of iron-mongers in this city dealing more or less in agricultural implements, viz: Messrs. E. G. Prior & Co., Marvin & Tilton, Nicholles & Renouf, and Matthews, Richards & Fye.

The selling prices here are: Mowers, $85 to $90; harvesters, $100 to $120; steel-frame twine-binders, $250 to $260; seed-sowers, etc., $75 to $115; harrows, $35; sulky plows, $60 to $107.50; walking plows, $25; hand seed grain drills, $9 to $17.50; horse-rakes, $45; manure and spading forks, $15 per dozen. Prices net; terms, ninety days.

Messrs. Nicholles & Renouf give as a summary of their trade in agricultural implements manufactured in the United States for the past five years, $1,000; add duty at 35 per cent., $350; total $1,350. Selling value estimated at $1,700. They say, "An appreciable quantity of this class of goods comes from Detroit, Mich., and does not appear in the customs record of British Columbia. Much of our trade of this kind is supplied from Montreal, but frequently when hurried we send the order to Portland, Oregon."

The same may be said as to the other dealers. Mr. Prior noted that he had received double the number of harvesters given on my list obtained from the customs official. They came over the Canadian Pacific Railroad, and record of them is only obtainable at the remote customs station. He says, however, that the entire amount of American agricultural machinery imported here, though not large, is considerable as compared with that of other origin.

It is only within three or four years past that modern agricultural machinery has had a market here of any importance, but it is increasing yearly. Naturally the larger part of it sold here comes from Eastern Canada.

Says Mr. Marvin (of Marvin & Tilton), who is the vice-consul: "The high duty shuts out nearly all kinds of agricultural machinery. Many American manufacturers have branch establishments in the Dominion, thus being able to compete with the other parties engaged in the same branches of trade. This is more particularly the case with mowing and reaping machines."

The custom-house value is the invoice value, and the rate of duty upon all agricultural implements and parts thereof is 35 per cent., excepting shovels and spades, which pay a duty of $1 per dozen and 25 per cent. ad valorem. There is no duty charged upon the cases in which such machinery is packed. The Dominion has endeavored to foster agriculture in the province by provision for two experimental farms, one of which, but recently commenced, is at Aggassiz on the main-land; the other will be established at some point on this island. The Vernon farm, belonging to Forbes Vernon, of the provincial ministry, is said to be about 10,000 acres, principally devoted to stock raising.

The foregoing, and the project formed four years ago of a "beef syndicate," to occupy and improve a tract of about 25,000 acres for raising beef, are the only extensive enterprises in the line that I have heard of. Of the present status of the syndicate I am unaware.

There are no exports of cereals or of any farm produce from this province as yet. No statistics showing the amount of arable land in the province are obtainable. The farming industry of the province as compared with its other resources is small, and is also limited by the small portion which, as believed, is tillable soil, in all its vast area; and very little of this small portion lies in one body.

On the main-land, in the Frazer River Valley and the Chilliwack district, and also about Okanagan, there are farms in addition to those already described, but none of these latter are large, though fertile, producing sometimes 60 bushels of wheat to the acre. On this island, which is in large part

unexplored, in the Cowichan, Quamichan, and Saanich districts, and about Comox, some 25 miles beyond Nanaimo, there are numerous small farms. The British Columbia Directory—a very creditable work—gives only 1,711 names as farmers in the entire province. Many of these do not hire a single hand, and but few have more than three hired men. Chinese and Indians find employment occasionally.

Much more of the province is suitable for stock raising, but its principal wealth lies in its mines, forests, and fisheries.—VICTORIA, BRITISH COLUMBIA, *September 20, 1888.*

ROBT. J. STEVENS,
Consul.

EXPORTS FROM MUNICH TO THE UNITED STATES.

Following is a digest of the invoice books of the consulate at Munich, Bavaria, for the four quarters of the year ending September, 30, 1888:

Articles.	Quarter ending—				Total for the year.
	December 31, 1887.	March 31, 1888.	June 30, 1888.	September 30, 1888.	
MUNICH.					
Artificial flowers	$4,363.53	$2,740.05	$1,964.12	$4,083.64	$13,151.34
Beer	1,132.57	1,629.53	1,621.57	1,370.54	5,754.21
Books and journals	2,551.36	2,132.12	4,981.82	3,498.60	13,163.90
Bronze powder	6,368.17	7,024.13	829.94	10,550.98	24,773.22
Chromos	2,592.05	3,288.89	4,487.05	5,757.34	16,125.33
Dried prunes	44,125.75	48,986.47	36,892.18	7,491.71	137,496.11
Dry colors	6,745.42	6,865.52	6,460.20	3,329.43	23,400.57
Glass paintings	23,182.04	7,442.71	2,357.56	8,899.90	41,882.21
Gloves	14,846.93	25,011.63	17,014.94	45,787.62	102,661.12
Lithographic stones	3,456.40	5,033.34	1,631.64	4,092.12	14,213.50
Metal paper	7,936.43	10,307.58	7,303.77	10,510.01	36,057.79
Oil paintings	38,716.29	19,671.13	7,039.79	44,285.93	109,713.14
Photographs	1,344.07	2,785.45	2,072.58	2,826.47	9,028.57
Stained glass	11,453.87	4,152.29	1,368.18	.....	16,974.34
Statuary	11,347.32	8,429.28	7,608.77	13,220.50	40,605.87
Sundries	8,495.87	7,604.72	5,281.17	11,531.01	32,912.77
Total in United States gold	188,658.07	163,104.84	108,915.28	177,235.80	637,913.99
AUGSBURG.					
Books and music	.....	.....	5,405.58	12,515.54	17,921.12
Chromos	7,891.68	6,651.34	.....	.....	14,543.02
Cotton thread	3,659.50	6,295.45	4,144.90	2,768.39	16,868.24
Mathematical instruments	3,031.18	3,284.92	3,119.25	4,458.19	13,893.54
Metal paper	4,736.20	6,745.57	4,714.42	4,969.98	21,166.17
Musical instruments	1,372.33	733.40	3,955.57	1,421.05	7,482.35
Springs	2,561.53	2,051.35	984.23	2,281.12	7,878.23
Sundries	9,821.38	4,690.96	5,348.50	7,988.54	27,849.38
Total in United States gold	33,073.80	30,452.99	27,672.45	36,402.81	127,602.05
Total, Munich and Augsburg	221,731.87	193,557.83	136,587.73	213,638.61	765,516.04
Total preceding year	148,528.60	147,690.16	122,959.19	212,986.91	632,164.86
Increase	73,203.27	45,867.67	13,628.54	651.70	133,351.18

EDWARD W. MEALEY,
Consul.

CANADIAN EXPORTS TO THE UNITED STATES.

Exports from the consular district of Port Stanley and St. Thomas to the United States during the year ended June 30, 1888.

Articles.	Quarter ending—				Total for the year.
	September 30.	December 31.	March 31.	June 30.	
Apples, green and dried	.....	$38,185.53	$10,113.92	.....	$48,839.45
Barley	$4,663.90	22,033.47	7,730.65	$2,110.00	36,588.02
Beans	.....	2,491.40	873.00	.....	3,364.40
Bran	1,191.00	.....	.....	.....	1,191.00
Breeding animals	2,941.00	1,005.00	6,077.00	2,129.00	12,152.00
Cattle	12,004.00	16,734.95	4,373.00	4,397.00	37,509.55
Eggs	8,866.20	12,862.85	2,582.64	429.60	24,741.29
Flax and tow	.....	4,072.50	2,391.20	3,686.30	10,150.00
Hides	4,341.00	7,756.25	7,518.19	7,243.87	26,859.31
Horses	7,540.00	4,080.00	20,607.50	11,422.50	43,650.00
Lumber	4,637.50	3,552.13	6,679.40	7,432.26	22,302.35
Malt	1,449.45	.....	.....	.....	1,449.45
Oil (petroleum) and products	1,793.77	2,162.27	2,444.39	2,904.82	9,305.25
Personal effects of emigrants	7,997.00	12,392.65	10,685.05	9,029.35	40,104.05
Potatoes and turnips	....	150.00	2,101.30	793.00	3,044.30
Poultry	.....	1,414.28	391.41	.....	1,806.19
Scrap-iron, steel, and brass	1,639.61	2,388.31	161.20	719.16	4,908.28
Sheep and lambs	22,492.45	45,969.00	5,273.75	352.70	74,087.90
Staves, heading, hoops, bolts, etc.	80,219.06	49,424.12	17,172.73	58,081.15	204,897.06
Telegraph poles and piling	2,032.40	194.20	.....	101.25	2,327.25
Wheat	2,750.00	.....	.....	.....	2,750.00
Wood, fire	4,350.00	2,073.90	2,298.50	5,084.00	13,806.40
Wool	4,306.32	.....	.....	.....	4,306.32
Miscellaneous	953.50	150.00	665.95	380.42	2,149.87
Total	176,168.82	216,809.53	110,140.79	116,296.38	619,415.52

Exports from the consular district of Quebec to the United States during the year ended June 30, 1888.

Articles.	Quarter ending—				Total for the year.
	September 30.	December 31.	March 31.	June 30.	
Animals	$3,702.60	$7,127.30	$480.00	$1,379.05	$12,688.95
Bark, hemlock	4,800.00	.....	.....	1,760.00	6,560.00
Balsam, fir	1,734.75	816.90	.....	.....	2,551.65
Furs	2,605.30	518.96	2,449.95	6,294.04	11,868.25
Fish	4,093.70	34,799.91	.....	.....	38,893.61
Glue stock	440.40	1,101.46	1,161.35	.....	2,703.21
Household goods	3,583.20	4,790.00	3,034.00	9,160.80	20,568.00
Hair	360.00	3,018.25	1,020.00	2,428.32	6,826.57
Hides	1,423.06	406.00	.....	.....	1,829.06
Indian goods	244.40	1,589.60	.....	.....	1,834.00
Lumber	108,835.41	80,052.25	39,656.40	58,024.44	286,568.50
Miscellaneous	3,602.96	5,440.47	3,965.89	4,410.04	17,419.36
Produce and provisions	.....	.....	26,693.09	26,792.32	53,485.41
Paper stock	1,347.00	900.00	.....	2,730.00	4,977.00
Returned goods	1,469.96	270.01	.....	.....	1,739.97
Sugar, maple	14,620.33	1,632.73	.....	.....	16,253.06
Tobacco	.....	.....	2,078.63	.....	2,078.63
Total	152,863.07	142,463.84	80,539.31	112,979.01	488,845.23

SUMATRA TOBACCO.

For some years last past, up to the commencement of 1888, the article of Sumatra tobacco attracted such general and constantly increasing attention in international markets that it appears to me certain not unimportant changes touching the quality and quantity of last year's production, as well as the sales of same, as far as proceeded, deserve to be reported, as many parties in the United States may appreciate the information. The yield of the crop of 1887 shows a decrease, compared to the quantity grown in 1886.

According to the estimates of it, which I believe to be about correct, it amounts, in round figures, to 130,000 bales in 1887, as against 130,512 bales in the preceding year, being a falling off of about 10,000 bales more or less from the quantity raised in 1886.

The quality of last year's crop shows a considerable deterioration, as compared to former years' products, at least of so much of it as has been placed upon the market up to October 1; whether the balance of it turns out otherwise remains to be seen. Its chief defects or inferiority, as described to me, consist of these: That the many different lots, parcels, or marks contain less tobacco having the peculiar properties on account of which the Sumatra product gained such a high reputation and has hitherto been so much in demand.

This remark applies, in a certain degree, more especially to the color and weight of the goods than to the size and perfection of the leaf or to its burning qualities. In the language of the trade, the leaf of a large portion of the crop is washed and without gum.

The cause assigned for the injury to the tobacco raised in Sumatra last year consisted of excessive rains; neither any change or shortcomings in the condition of the soil nor any neglect in its cultivation are said or claimed to to have had anything to do with it.

Up to the 1st of October, or during the first nine months of the current year, there were five of the usual "inscription sales" at Amsterdam, at which 87,429 bales of Sumatra tobacco were offered and very nearly all disposed of. One sale of 5,130 bales took place at Rotterdam during the same period of time. So that, by this time, about 92,559 bales of the crop of the year 1887 have been sold and transferred by the owners and importers of the goods (first hand) to merchants in leaf tobacco and manufacturers of cigars here and elsewhere.

There has not been and is not observable quite the same anxiety and eagerness on the part of buyers of the goods; there is very much less animation in the trade, when compared to that of last and former years. The prices realized so far show a not inconsiderable decline in many cases, or as compared with those obtained for same marks, or products of same plantations of previous years.

American firms are very much less numerously represented at the sales this season than was the case in 1887, which, as explained to me, is partly owing to the important fact that tobacco suitable, in all respects, for the American market is found in only very limited quantities in the crop now under consideration. What most likely will prove more particularly interesting information on the subject to parties in the United States engaged in the cultivation and the trade of the article consists hereof, that the exports of it have so very largely decreased. During the nine months of the current year, or up to September 30, 1888, the quantity of Sumatra tobacco shipped from this consular district to the United States amounted to 10,715 bales, whereas the exports for the corresponding nine months of last year were represented by 18,758 bales, showing a decrease of 8,043 bales in the exports during the past nine months of the current year.

What the purchases for and shipments to American markets will be between now and up to the close of the year can, of course, be but matter of conjecture; but, judging from present indications, I should hardly think the total exports of the year would come up to much more than about half the quantity which was exported in 1887, when it amounted to 35,275 bales. There are now rumors current according to which the product of certain tobacco plantations in Sumatra will in future be consigned to Bremen and be put upon the market there. Diligent inquiry into this matter has satisfied me that although reports to that effect are well authorized and sustained, it would nevertheless seem safe to state that there do not exist, as yet, any justified apprehensions that Holland, and more especially Amsterdam, will lose its prominency as the chief European mart for the article for years to come. But remarkable and general enterprise and energy are vastly becoming proverbial characteristics of the German people, and it would seem to behoove their Dutch neighbors to bestir and exert themselves betimes, and to the utmost, if they would retain their advantage or superiority in the case under consideration, as well as in some other matters relating to commerce, trade, industry, etc.

BORNEO TOBACCO.

A Rotterdam company, engaged in growing tobacco in north Borneo, British, has several hundred bales of the product of its last year's crop now in the market and which will undoubtedly be sold in a few days. The quality of it is very highly spoken of in trade circles, the broker's taxation or valuation of it being 140 cents, Dutch currency, per half kilogram, which is as much, so far this year, as any of the better or best lots or marks of "Sumatra" brought up.

A few days ago a sale took place here of a small quantity of Dutch Borneo tobacco. It was the past year's product, 1887, of a first attempt or experiment to cultivate tobacco in that part of Borneo. The result proved far from being satisfactory; the quality turned out to be rather poor, fetching only 65 cents, Dutch currency, per half kilogram.

A gentleman here interested in the undertaking informs me that he is not in the least discouraged about attaining more or most favorable results from future trials soon to be made there on a larger scale. He also states to me that the product of the first planting was obtained under extremely unfavorable circumstances, so that the poor outcome does not disappoint him and those associated with him in the enterprise.

Statements showing the product of the statistics relating to the general commercial movements of the Netherlands in 1887, as compared with those of the four preceding years are as follows:

Year.	General imports.	Imports for consumption.	General exports.	Uitvoer nit het vrije verkeer.*	Goods in transit with transshipment.	Goods in transit without transshipment.
	Kilograms.	*Florins.*	*Kilograms.*	*Florins.*	*Kilograms.*	*Kilograms.*
1883.....	11,720,165,746	1,072,473,778	5,583,146,487	684,409,100	276,914,788	1,817,542,727
1884.....	11,925,794,447	1,128,471,467	6,009,079,145	841,231,746	275,441,258	1,891,705,692
1885.....	11,663,745,812	1,091,487,883	6,115,579,730	891,036,294	323,060,141	1,910,615,338
1886.....	11,579,166,228	1,102,693,328	6,046,068,794	949,245,799	376,636,918	1,793,406,179
1887.....	12,558,934,837	1,136,997,176	6,839,800,494	991,618,008	370,872,389	2,003,759,881

*By "Uitvoer nit het vrije verkeer" is meant: The exports of the "general exports" as consist of articles of domestic origin, and, if having been imported, of such articles as are not subjected to any customs control or fiscal formalities.

NOTE.—From the figures for 1887, compared with those for 1886, is shown that the general imports increased fully 8.46 per cent., the imports for consumption fully 3.11 per cent., the general exports fully 13.62 per cent., the "Uitvoer nit het vrije verkeer" nearly 4.46 per cent., the transit trade without transshipment nearly 11.73 per cent.; whereas the transit trade with transshipment decreased fully 1.58 per cent.

AMSTERDAM, *October 2, 1888.*

D. ECKSTEIN,
Consul.

THE LUMBER INDUSTRY OF THE OTTAWA VALLEY.

In previous annual reports the fact has been stated that the Ottawa district was a manufacturing and not an agricultural district. The exportations of agricultural products are merely nominal, deserving of little attention through their insignificance.

The all-absorbing industry is that of lumber, which is, as a specialty, not equaled in its extent and value at any other point in the Dominion. Such being the situation, my report will be confined mainly to facts and figures which are incident to the prosecution of the lumber business, not only of this district, but of the locality of country known as the Ottawa valley, through which, by means of the Ottawa River, this locality is drained of its forest products, and which river also furnishes the magnificent power to operate the saws which reduce the logs to shapely lumber.

The business of the past year has moved steadily onward. No difficulty has been experienced in readily marketing the output, and at prices fully equal to that of any preceding year. All desirable lots, meaning those lots especially known for their desirable qualifications, either sawed American

style, viz: Boards and plank, or English style, 3-inch "deal" were principally sold before any of the season's logs were sawed. In this connection I may add that probably 50 per cent. of all the stock which will be sawed at Ottawa and vicinity in the season of 1888 is already sold, even while the trees are yet standing in the forests. The yearly output of the Ottawa City Lumber Mills will approximate 350,000,000 feet. The product of mills tributary to Ottawa and its agency, Grenville, will aggregate 250,000,000 feet, making 600,000,000 feet for the Ottawa Valley district.

These aggregate figures to those unacquainted with lumber, or unaccustomed to lumber figures, will appear enormous; but when I say that these figures, multiplied by three, will not represent the full sum of the yearly requirements of the lumber trade of the city of Chicago alone, their insignificance will be apparent.

A false impression too generally prevails in regard to the importance and the influence on the American lumber markets of the pine lumber produced in Canada, as also the quantity of her available pine and the general quality thereof. In regard to the production of sawed pine lumber of a quality available for the United States market, and suitable for the demands of the English market, I firmly believe that the yearly aggregate will not exceed 1,000,000,000 feet. This quantity must be doubled to supply Chicago, and is but a fair supply for the little village of Tonawanda, N. Y., while the city of Buffalo would simply view this quantity with complacency as bidding fair for her one year's necessities.

This quantity, however, must be divided between the United States and England with other foreign markets, while Canada, for her own requirements, must, of necessity, reserve a portion. As it is with the United States alone I have to deal in this report, I have made great efforts to obtain reliable figures, both in feet and values, of the trade of this section with the United States for the calendar year 1887. I have carefully compiled from the 2,875 certificates which have passed through this office for the year a table of the quantity of sawed lumber with other forest products and the values thereof. Through the kindness and courtesy of the consuls at Prescott and Brockville, I am also enabled to give the amount in feet and value which has been declared through these consulates, which, combined with Ottawa, embrace the total exports of forest products of the Ottawa valley. In my judgment the quantity indicated by the figures is a reasonable approximate to one-half of the amount of sawed pine lumber which is exported from Canada to the United States.

The unprecedented drought of the past year, during the sawing season and till very late in the fall, undoubtedly curtailed the cutting capacities of the mills at Ottawa, specially and to a degree that of all the mills located on the Ottawa River, and which likewise extended to the log supply. The winter opened with a shortage of lumber on the docks for drying, estimated to be fully 50,000,000 feet. This shortage will be shown in the business of 1888, that of 1887 being merely nominally affected thereby.

The important question now so widely agitating the American people, that of free lumber, and I may add free logs—for free lumber to the Canadian should mean free logs to the American—is one on which I may not be expected to venture a personal opinion, but I may be permitted, from the stand-point of a lumberman of over forty-five years' active experience in the lumber business in Canada and the United States, to review the situation as it appears to exist, and permit others to draw such conclusions therefrom as may enlighten them toward reaching a just termination of a complicated question.

I think I am warranted in presupposing that the desired object to be attained in the remission of the duty on lumber is an anticipated benefit to the American consumer at large, both by cheapening the market price now, as well as tending to prolong the existence of the American forests by the substitution of Canadian lumber and logs—the only other country which has white pine timber.

Will the remission of the $2 duty have the desired effect? I think not, and will give my reasons for the conclusion that no appreciable benefit will transpire to the American consumer, and why and how the advantage will accrue to the Canadians. The control of the prices of lumber in the United States is certainly and absolutely in the hands of the timber owners and large mill men. The standing timber is held in large bodies by heavy capitalists, who, owning the mills, can govern the supply of manufactured lumber, and this element of first control is the chief factor in making yearly market values, it being influenced only by the probable demand, present or prospective.

I assert that in the making of prices the American lumbermen have never been controlled or scarcely influenced in any degree by the competition of Canadian pine lumber. I confine my remarks to pine lumber, and have nothing to offer in respect to the spruce and hemlock of the eastern portion of Canada, tributary to the Eastern States, or to the lumber of the northwest provinces, tributary to the United States' Territories and far Western States; but to the white pine sawed lumber, the produce of the middle part of the provinces of Quebec and Ontario, lying between Montreal on the east and Lake Superior on the west, within which bounds is produced the only quantities of white pine lumber worthy of any consideration, and which embraces the Ottawa valley, the chief outlet of this immense district or pine belt lying north of the Ottawa River.

The fact that pine trees are not reproduced enters largely into the question of possibility of control of the timber. The question how, as well as by whom, are the pine forests of the United States and Canada owned and controlled is a factor in determining the future of prices and of the possible advantages to be derived by the proposed legislation.

The manner in which the United States Government has disposed of its timbered possessions is well understood, and that individual purchasers have come into possession of them in fee simple at a fixed price per acre; that

having thus obtained absolute control and ownership they can and do manage their own business affairs in connection therewith without let or hindrance from the Government as grantor, such lands, subsequent to purchase by individuals, being subject only to local and State taxation. The timber thereon is cut at will or left standing, as the necessities or inclinations of the owners may compel or induce.

Turning now to the Canadian timber we find a widely different practice. The forest possessions are not sold by the governments which are the owners. The lands in Quebec are controlled by the provincial government of Quebec, while those in Ontario are controlled by the provincial government of Ontario. The Dominion government owns and controls but a limited area in the northwest. The forest possessions are not sold in fee simple, but are leased for a term of one year under certain conditions and regulations, the *modus* of doing which is by public auction. Whenever the Government may deem it judicious or opportune to dispose of certain areas of timbered lands it gives public notice of the time and place, with a description of the lands to be disposed of, and the privilege of leasing is put up for the highest attainable sum, which sum is to be paid simply as a bonus for the privilege of being the lessee of the lands offered, under conditions of lease or license, which are statutory and, of course, well understood by the bidders. The chief conditions of the lease, termed a "timber license," are that the lessee shall (additional to the first "bonus" paid), on the 1st day of May, pay into the Crown land office a certain sum per square mile (640 acres), which sum was originally $1; then it was advanced to $2, and is now fixed at $3. If any trees have been cut on lands covered by the license, such cutting shall be duly reported under oath, and Crown dues paid therefor according to the tariff schedule, as given below.

Tariff of timber dues.

	Quebec.	Ontario.
Oak and walnut, per cubic foot	$0.04	$0.03
Maple, elm, ash, and tamarac, per cubic foot		.02
Norway and white pine, birch, bass-wood, cedar, and other square timber, per cubic foot	.02	.02
Pine saw-logs, including culls, each	.22	(*)
Spruce saw-logs, 13½ feet long, each	.05½	.10
Hemlock saw-logs, 13½ feet long, each	.06	.10
Hard wood saw-logs and tamarac, round	.22	.25
Balsam saw-logs, 13½ feet long, each	.05	.10
Pipe staves, per 1,000	7.00	7.00
West India staves	2.25	2.25
Cord-wood, hard, per cord of 128 feet	.16	.20
Cord-wood, soft, per cord of 128 feet	.08	.12½
Cedar rails, 10 to 12 feet long, per 100	.25	.01
Cedar picket, per 100	.15	.01
Cedar or pine shingles, short, per 1,000	.08	.01
Cedar or pine shingles, long, per 1,000	.15	.01
Cedar telegraph poles, each	.06	.01

Tariff of timber dues—Continued.

	Quebec.	Ontario.
Cedar fence-posts, per foot in length	.00½	.01
Cedar hop-poles, per 100	.20	.01
Rails, other than cedar, per 100	.10	.01
Pickets, other than cedar, per 100	.05	.01
Railway ties, any timber, each	.02	(†)
Hemlock lath-wood, per cord	.15	.01
Hemlock bark, per cord	.32	.30
Birch sticks, 28 feet long, each	25 to 30c.	1c. per cu. ft.
Knees, according to size, each	5 to 25c.	(†)
Futtocks, according to size, each	10 to 35c.	10
Cedar for shingles, per cord	.16	.12½
Pine for shingles, per cord	.20	.12½
Boom timber, round, spruce, per lineal foot	.00½	.01¼ cub.
Boom timber, pine or tamarac, per lineal foot	.01	.01¼ cub.
Small round spruce spars, under 10 feet, per lineal foot	.00½	.....
Birch, per cord of 128 feet	.30	.....

(*) $1 per 100 feet. (†) 15 per cent. ad valorem.

Additional export Dominion customs tariff.

Pine and Norway saw-logs, per 1,000 feet, board measure	$2.00
Spruce and hemlock saw-logs, per 1,000 feet, board measure	1.00
Shingle-bolts, per cord of 128 feet	1.50

By the character and sum of the annual land dues ($300) and the nature and amount to be paid as timber dues (per tariff), a full appreciation of the position of the lessee will be had, while the lessor, the Government, it will be also observed, continues its sole control over the timber. The only rights which the lessee possesses is to cut the timber on his licensed lands and annually pay the Government its demands, and when promptly paid the continued right to renew the license yearly.

It is likewise the right of the Government to change the terms and conditions at will, taking effect after the 1st of May of the following year. I will refer to the last order making such changes, by which it will be seen how absolute is the Government control and their disposition in the premises.

PUBLIC NOTICE.

DEPARTMENT OF CROWN LANDS,
TORONTO, *April 29, 1887.*

Public notice is hereby given that, by order in council of 27th instant, the rate of ground-rent on timber limits or berths is increased from $2 to $3 per square mile per annum; and the dues on square and waving pine timber are increased from 1¼ to 2 cents per cubic foot; and the dues on pine *saw-logs* are increased from 75 cents to $1 per thousand feet, board measure.

The increased ground-rent to be payable on licenses to cut timber granted or renewed on and after the first day of May, 1887, and the increased dues on pine timber and pine saw-logs to be payable on such pine timber and saw-logs as may be cut after the date last above mentioned.

[Signed.] F. B. PARDEE,
Commissioner.

It will be observed that this order is dated April 29, to take effect May 1, and that without any prior notification of intention being given. This order means an additional tax upon limit holders varying in its effects upon licenses

according to their holdings, but in sums ranging approximately from $1,000 to $80,000 individually on the annual dues to be paid on the lands, in addition to which comes the further advance on the timber cut.

I have been thus explicit in describing the systems of the two countries, for to my mind they are the key by which the situation and effect may be safely prejudged in case free lumber becomes a reality.

There is no dispute that the American manufacturer controls the making of prices. In doing this he is not influenced by the Canadian supply in any degree. If the duty of $2 is removed it will not affect the American price, because it has never been a factor and will still be unfelt. No lower price will prevail in the United States than heretofore, and no different net results will be experienced by the manufacturer.

The Canadian, on the contrary, will lay his lumber down in the American market at $2 less per thousand, and will obtain for it the same as the American does, so that the net result to the Canadian manufacturer will be a clear gain of the $2 which the American Government has remitted. This additional net result to the Canadian manufacturer will, however, be of very brief duration.

Having shown how the governments in Canada continue their control of the timber lands and their disposition to tax them to the utmost, I am confident that not a May pay-day will pass before a public notice will issue in effect that a further increase in annual and timber dues has been made an order in council, in sums sufficient to absorb the $2 per thousand into the provincial treasuries.

Some may question the light treatment which I give the production of Canada lumber exported to the United States, but I believe the statement to be sound and reliable that the Canadian sawed pine lumber sent to the United States for consumption is not sufficient in volume to affect prices by being a factor in any degree.

The following table, showing in feet and value the declared exports of sawed lumber and value only of other forest products for the calendar year ending December 31, 1887, will be proof positive to experienced lumbermen of the soundness of my conclusions. This table embraces the declared exports of pine at the ports of Ottawa, Grenville, Brockville, and Prescott, and is a fully reliable statement of the exports to the United States of the Ottawa valley section.

Location.	For consumption.	Value.	In bond for export.	Value.	Value, all other wood products.
	Feet.		*Feet.*		
Ottawa	150,199,285	$2,017,648.47	33,698,348	$610,795.71	$155,489.36
Grenville	30,695,339	263,393.21	.....	.....	30,465.84
Prescott	9,497,863	116,513.23	.....	.....	4,191.60
Brockville	36,747,472	429,679.64	.....	.....	33,151.94
Total	227,139,959	2,827,234.55	33,698,348	610,795.71	223,298.74

The following shows the exports from Canada (customs returns) of pine boards and plank from all of Canada to the United States for the fiscal year ending June 30:

	Feet.	Value.
1884	557,266,000	$7,056,508
1885	562,542,000	6,956,248
1886	514,985,000	5,853,021
1887	508,304,000	6,209,023

The following shows the export of pine saw-logs to the United States in the following years:

	Feet.	Value.
1884	974,000	$8,012
1885	380,000	2,300
1886	6,350,000	49,242
1887	2,869,000	24,452

By comparing the quantities shown in the first table (being the amount exported from the Ottawa valley with the amount shipped annually from all of Canada, it will be found that the first bears a percentage to the total exported in 1887 of 50 per cent., showing the important position which the Ottawa district holds in this industry.

The second table will show also the correctness of my statement that the volume of pine lumber exported to the United States from Canada is too insignificant to have any influence in the making of prices in the United States. The figures show that if all the lumber sent into the United States from Canada was placed in the Chicago market it would supply but one-quarter of the requirements of that market alone, and but one-half of the quantity handled in either Tonawanda or Buffalo.

Regarding the few logs shown to be exported to the United States, they are of no account whatever, nor do I believe that if "free lumber" were to prevail that any appreciable increase of log exports would be seen, for the logs would, to a large extent, be manufactured into lumber at the place of growth, or approximately so, as long as the lumber was admitted free. This course presents very many palpable advantages as against the expense of the transfer of the mill.

A few mill-owners on the shores or adjacent to the shores of Lake Huron and Lake Michigan, having exhausted their available timber, would make a few spasmodic attempts to import logs from Canada, but a very brief attempt to handle logs across the lakes would develop the superiority of the location nearer the timber. In addition to this, by operating their mills in Canada they would find the English markets open to them, for it is in Canada that the English buyer of pine lumber always has and undoubtedly will continue to look for his stock. This advantage to the manufacturer is one which will not be lost or disregarded, for the English market requires from Canada pine lumber (mainly cut into "deal") in volume about half as large as is sold to the States.

The English demand also is gradually changing in the character of its requirements of "deals," sawed boards, and plank.

That the character and volume of the English trade demand for sawed pine lumber from Canada may be properly appreciated, and that its relative importance to the Canadian, as compared to his trade with the United States, I append a statement of the exports to Great Britain for the same years which I have heretofore given for that to the United States. This comparison shows that fully double the quantity is sent into the United States market in feet over that sent into the English market, but as that sawed for the English is 90 per cent. "deals," sawed 3 inches thick, and is now accepted down in quality to a grade made from quite "common stock," the greater advantage to the manufacturer lies in catering to the English requirements.

Pine boards, planks, and "deals" exported from Canada to Great Britain in the following years. (Canadian statistics.)

Description.	1884.		1885.	
	Quantities.	Value.	Quantities.	Value.
	Feet.		*Feet.*	
Plank and boards	24,484,000	$297,786	19,156,000	$251,070
Deals	700,766,000	7,610,813	198,393,250	2,679,270
Total	725,250,000	7,908,599	217,549,250	2,930,340

Description.	1886.		1887.	
	Quantities.	Value.	Quantities.	Value.
	Feet.		*Feet.*	
Plank and boards	12,673,000	$155,221	17,016,000	$241,360
Deals	205,326,000	2,944,230	207,861,500	3,148,161
Total	217,999,000	3,099,451	224,877,500	3,389,521

The abnormal exports of the year 1884 will be specially observed, but can not be explained.

This subject is a prolific one, and very many points of interest and of commercial value could be entered into in connection therewith, but to do this would occupy more space than is allotted to this character of consular reports. If, however, from the statements, conclusions, and statistics given I have in any degree assisted toward a clearer understanding of the free lumber problem, the purpose in view will have been attained. — OTTAWA.

THOS. H. HOTCHKISS,

Consul.

COMMERCE AND FISHERIES OF ST. PIERRE.

Miquelon Islands, three in number, are situated in the Atlantic Ocean, about 25 miles from the southern coast of Newfoundland. They are owned by France and are used by that country as a penal colony for soldiers convicted of minor offenses. The principal industry of the place is the fisheries, which are conducted very extensively. The islands are designated as Great Miquelon, Petite Miquelon, or Langlade, and St. Pierre. Great and Petite Miquelon are connected by a sand bar about 7 miles in length, very narrow in the center, and widening as it approaches the islands. St. Pierre is separated from the other islands by a strait about 2 miles wide very difficult to navigate on account of the strong tides. Great Miquelon has an area of about 26,000 acres of irregular rock surface, high and bold towards the sea, and almost destitute of soil or vegetation. Petite Miquelon has an area of about 20,000 acres, of the same characteristics as Great Miquelon; a small portion of it, however, is suitable, with great labor, for agriculture, which is carried on to a very limited extent. St. Pierre has an area of about 6,500 acres, only about 200 of which are suitable for town purposes. It has a good harbor where the town of St. Pierre is located. The island is wholly unproductive, except so far as the inhabitants have overcome nature by utilizing earth brought by ships as ballast as an artificial soil, enabling them to grow shrubbery and a few vegetables, and which softens the appearance of the town in contrast with its rugged and sterile surroundings.

POPULATION.

The population of Miquelon, according to the census of 1887, is as follows:

Great Miquelon	611
Petite Miquelon	574
St. Pierre	4,744
Total	5,929

Males	3,013
Females	2,916
Total	5,929

NATIONALITY.

Natives of Miquelon	3,779
Natives of France	1,373
Natives of French colonies	11
Natives of United States	19
Natives of British Isles	672
Natives of Spain	73
Natives of Greece	1
Natives of Italy	1
Total	5,929

COMMERCE.

The commerce of St. Pierre reached, in 1887, in round figures, the marvelous sum of 32,000,000 francs, the exports for that year being 18,230,270 francs, as shown below:

	Francs.
To France, merchandise, French origin	102,676
To France, merchandise, foreign origin	520,840
To France, product of Miquelon, dry fish	11,253,937
To Martinique, French colony, dry fish	341,728
To Guadeloupe, French colony, dry fish	1,493,500
To La Reunion, French colony, dry fish	271,749
To Algeria and Tunis, French colony, dry fish	45,820
To foreign countries, dry fish	890,504
To foreign countries, various products	3,255,733
Total	18,230,272

IMPORTS.

The imports of St. Pierre for the same year amounted to 13,746,587 francs, made up as follows:

	Francs.
From France, clothing and confections	890,504
From France, wool, cotton, and silk goods	591,246
From France, butter and lard	99,611
From France, wine, beer, and cider	504,652
From France, alcoholic liquors	399,920
From France, salt	696,655
From France, nets and fishing supplies	185,772
From foreign countries	10,378,227
Total	13,746,587

On account of its geographical position and its proximity to the southern coast of Newfoundland, St. Pierre is an important commercial center. The fishermen of the Newfoundland coast, up to the present year, brought bait to St. Pierre, where they exchanged it for provisions, dry goods, etc. This system of exchange caused great activity in trade, but the passage of the bait act by the Newfoundland legislature deprived its own people of this very profitable market for their bait, and injured themselves more than it did the French fishermen, against whom it was aimed. The commerce of St. Pierre is mostly in the hands of French citizens. Foreigners can not trade in fish unless through a French partner. Of the importations of St. Pierre, amounting to 13,746,587 francs in value, only about one-fourth comes from France. The other three-fourths come from foreign countries. Canada finds a market at this place for products valued at 887,950 francs. I was unable to procure the exact figures of the value of imports from the United States, but they are valued at nearly 1,000,000 francs. There is no reason, unless it be a want of regular steam transportation between United States ports and St. Pierre, why the United States can not have almost a monopoly of this trade. The merchants of St. Pierre prefer trading with Americans, but they are so occupied with the fisheries that trade must come

to them. If some enterprising ship owner would run fortnightly between Boston, St. Johns, Newfoundland, St. Pierre, Sydney, and Halifax a steamship of about 800 tons, with passenger accommodations, I feel assured that it would be a most profitable venture, and it would open up a large commercial field for our merchants. The duty on merchandize entered at St. Pierre being nominal would not affect the trade. During the year 1887 3,543 vessels entered at the custom-house at St. Pierre and 3,529 cleared, representing a total of 422,334 tons.

THE FISHERIES.

St. Pierre, on account of its contiguity to the fishing banks, and the bounties paid by the Government of France, has become one of the greatest fishing stations in the world. The local fishing fleet consists of 220 vessels of from 40 to 90 tons; the fleet from France, of 120 square-rigged vessels, from 100 to 300 tons. The former land and dry their fish at St. Pierre, the latter bring their fish undried to France. The fisheries of the island are confined to cod, which have been very successful this year, notwithstanding the temporary inconvenience experienced in early spring by the passage of the Newfoundland bait act. The French Government pays a per capita bounty of 50 francs, and 10 francs per quintal for fish dried and exported from the islands. The fishing season commences about the middle of April, and terminates about the middle of September. It is not considered profitable to fish after the last-named date on account of the storms. St. Pierre depended heretofore entirely on Newfoundland for its supply of bait. The difficulty in procuring the bait mentioned above was overcome by obtaining in some way frozen herring, but was found that the cod would not take it, and the vessels using it returned empty. Salt squid, of which they had an abundance, was substituted and found to be successful, and the catch was more than an average one. The French claim that the Newfoundland bait act forced them to resort to methods within their own control to secure bait, and that they are now independent of Newfoundland. They have on hand sufficient bait for next spring's operation, and the money heretofore paid Newfoundland fishermen for bait is retained by the French fishermen.

GOVERNMENT.

The government of the colony consists of a governor, a secretary of the interior, a chief justice, and a commissioner of marine, appointed by the French Government, and which constitute the privy council, a legislature elected by the people of the three islands, and a city council for St. Pierre, elected by its citizens. The buildings are frame, with an occasional one of cement or brick, quite small and quaint. The streets of St. Pierre are very narrow and without sidewalks. There are no cattle, sheep, or hogs on the island, except a few oxen, which are used for carting purposes, and only about six ponies. There being no means of conveyance all must walk.—HALIFAX, NOVA SCOTIA, *October 30, 1888.*

M. H. PHELAN,
Consul-General.

TRADE OF CARTHAGENA.

The declared exports from this consular district to the United States have increased over 400 per cent. within the last ten years, while the total exports have increased (according to the best data I have been able to obtain) over 300 per cent. during the same time.

As showing that this increase is not due to the crude products of Colombian forests, I tabulated the declared values of the India rubber and of the totals exported to the United States during each quarter of the years 1867, 1877, and 1887.

Quarter ended—	Declared value.					
	1867.		1877.		1887.	
	Rubber.	Total value.	Rubber.	Total exports.	Rubber.	Total exports.
March 31,.....	$16,503.30	$21,906.47	$47,053.48	$72,102.01	$38,384.67	$209,720.61
June 30*.....	77,279.79	105,680.23	21,878.58	41,140.83	24,747.51	234,252.10
September 30.....	51,341.52	60,764.01	33,424.86	51,712.10	45,691.45	236,119.57
December 31.....	21,774.54	26,895.71	24,852.19	55,372.53	47,936.62	233,056.50
Total during year..	166,899.15	215,246.42	127,209.11	220,327.47	156,760.25	913,148.78

* Raw cotton to the declared value of $21,108.59 was exported to the United States during this quarter.

Should peace continue and the public works, which have caused this gratifying increase, be completed—both of which may be looked for under the new constitution and the present government—the future increase will be even greater, and Carthagena again become the commercial emporium of the Spanish main.

Under the Spanish rule the whole commerce (both exports and imports) of all that immense extent of country tributary to the Magdalena River passed through the gates of Carthagena. A canal, called the "Dique," connected the strongly fortified bay of Carthagena with the Magdalena River, and gave them command not only of the rich agricultural products of that great river and its branches, but also of those famed mines of gold, silver, and emeralds which made Spain the most powerful and richest nation of those times.

But when this canal was neglected, left to silt up, and its navigation thus obstructed, commerce sought new channels. Santa Martha and Barranquilla divided the former trade of Carthagena, and when a railroad was built connecting the latter place with the open roadstead of Savanilla, it almost monopolized the foreign trade of Colombia.

This roadstead is so exposed and ships are obliged to anchor such a distance from shore as often to make loading or unloading impossible for days. Ships are not infrequently blown ashore there.

The delays and expenses attendant on lighterage under such circumstances, and to the transfers from the lighters to the railroad, and again from that to

the river steamboats at Barranquilla, induced the Government to order the re-opening of the Dique. The work has been carried on slowly at intervals, until now the last published report gives twenty-four steamers per month as the number making regular trips between Carthagena and all points on the Magdalena River and its tributaries.

The general government now recognizes the importance of this most necessary artery of Colombian commerce; has declared it a national work, and appropriated $100,000 to begin making it, not only navigable for the largest river steam-boats at all seasons of the year, but also a permanent channel, as Captain Eads did at the mouth of the Mississippi.

Foreign trade has more than trebled, not only in value, but also in number of ocean steam-ships touching here. Ten years since not over five or six steamers called per month, now nineteen ocean steam-ships call here on their regular trips every month besides extra steamers.

The Atlas Steam-ship Company send their steamers direct from New York in eight days, arriving here every alternate Friday. The Spanish line connects at Havana for New York. The West Indies and Liverpool line sends a steamer from here to New Orleans every week, combined with the Harrison line. The Royal Mail, the French, and the Hamburg lines afford connections with New York and New Orleans via Colon, and direct with Europe, England, and the ports of the West Indies. The only American line touching at this port is the New Orleans and Colombian Steam-ship Company, which has one steamer, the *Madrid*, now on this route, and promises to put on another and faster vessel.

The distance from the sea-board to all points reached via the Magdalena River and its tributaries is the same by the Savanilla and Barranquilla route as by the Dique (Carthagena) route. It is, therefore, evident that commerce will prefer the safe and commodious Bay of Carthagena, where the river steam-boats can lay alongside the ocean steam-ships at all times, with no transshipment between the head of navigation on those rivers and the sea-board, to the exposed roadstead of Savanilla, with its expensive lighterage and transshipments there and at Barranquilla, so long as the Dique is kept navigable. Moreover, all the foreign trade of the Sinú and Atrato Rivers is, from necessity, obliged to pass through Carthagena.

Immigration and capital will make their valleys the gardens of the world, while their mountains are so rich in minerals that old residents state the Spanish conquerors would allow no prospecting parties in those regions, giving as their reason, "If we open the Sinú we shall ruin Peru."

A good maçadamized road has been built from the "savannas" to Tolu, and a company formed to run steam-boats between Carthagena, Tolu, and the Sinú and Atrato Rivers.

Several "concessions" for railroads have been granted, and the present Government is doing all in its power to develop the agricultural and mining interests of the country by opening new or improving the old water-ways, railroads, turnpikes, etc.

AMERICAN MANUFACTURES.

Judging from the statistics accessible, about 24 per cent. in value and 43 per cent. in weight of imports, about 28 per cent. in value and 26 per cent. in weight of exportations, are from and to the United States.

It is within the personal knowledge of the writer that American manufacturers could easily sell very much greater quantities of their goods to Colombia. Take, for example, cotton goods. During a residence of over twenty years in this country I have made several attempts to introduce American bleached and unbleached cottons, calicoes, prints, etc. Several invoices of considerable value were brought, and both the quality and price proved satisfactory, but as the manufacturers refused to cut their pieces to the fixed lengths customary in South America, where all dealers buy by the "piece" instead of by the yard, importations stopped. A "piece" of calico contains 30 yards; a "bale," 50 "pieces."

When it is remembered that throughout the tropics cotton is universally worn, and that as universally a "piece" contains just so many yards, it seems strange that American manufacturers refuse so simple a means to secure a valuable trade.

England furnishes most of the cotton goods; her share of our total imports is about 45 per cent. in value and about 28 per cent. in weight.

A LOST TRADE.

Formerly the steam-boats navigating Colombian rivers were bought in the United States, now they are bought in England. One of the Carthagena companies has lately bought three first-class iron steam-boats in England, and they are now running regularly from Carthagena to the head of navigation on the Magdalena River via the Dique.

The latest one launched (the *Pedro Velez*) has horizontal compound surface-condensing engines, with two return tubular boilers; steam capstan; iron hull, divided into 18 water-tight compartments; length over all, 139 feet 6 inches; beam moulded, 24 feet 6 inches; depth moulded, 4 feet; main saloon, 50 feet; passenger state-rooms, 14; officers' rooms on hurricane deck; electric bells, and all modern improvements. Cost in England, over £11,000; and about £2,000 more for freight, skilled labor, putting her together here, etc.; total cost, when finished here, £14,000.

Considering how much nearer the United States are to Colombia, and the greater experience American builders have had in constructing steamboats for shallow rivers, this sudden transfer of so important an industry from American manufactories to British workshops deserves careful attention and study.

DUTIES.

These are so highly protective as to have defeated their object. All attempts to establish manufactures here have failed, except those favored by special laws exempting from the ordinary duties the raw materials used therein. Having noted this, the Government has lately had a law passed permitting

those who first establish manufactories here to (under certain restrictions) introduce not only the "plant," but also the raw materials used, free of duties for a certain number of years.

To show the amount of protection thus afforded, I state the duties now levied on a few articles of daily use. All duties are levied on the gross weight of the package:

To protect the Government monopoly, the duty on salt, per kilogram, is	$0.12
The duty on wire, steel bars, crockery, hides, soap, hams, etc., per kilogram	.25
The duty on boots, shoes (of rubber), handkerchiefs, etc., per kilogram	1.00
The duty on boots, shoes (of leather), linen handkerchiefs, etc., per kilogram	1.25
The duty on manufactured tobacco, woolen clothing, etc., per kilogram	1.50
The duty on a barrel of flour amounts to	6.25
The duty on a barrel of tar amounts to	12.50
The duty on a 10-gallon case of kerosene	4.37

"Concessions," giving exclusive privileges for a term of years, exemption of plant, materials, etc., from duties, have already been granted to contractors, viz: new wharves, with tram-way to custom-house, marine railway, foundry, and machine-shop, railroad to Arjona, electric lights, etc. Concessions for water-works, new market, petroleum refinery, furniture factory, and many others, are waiting responsible proposals. Petroleum oozes from the ground in several places in this consular district, and the forests are full of the finest cabinet woods, but we have neither refineries nor furniture manufactories. Duty on furniture is 6¼ to 37½ cents per kilogram.

IMMIGRATION.

Much interest begins to be manifested in the best means of attracting immigration. The President treated the subject at length in his late message. The legislature of this department appointed a special "immigration commission," and appropriated $30,000 to carry out its objects at the last session. The President favors immigrants of the Spanish race.

Although the soil and climate are such that all tropical crops flourish luxuriantly—rice grows on the hillsides, sugar-cane is better after twenty years than when first planted, two crops of corn per year, and grass grows all the year round—still this country is not the place for American agriculturists at present.

Theoretically, Colombia gives a homestead to settlers, but not one acre of land has as yet been surveyed or set apart for this purpose; and the exorbitant duties on what Americans consider the necessaries of life makes living very expensive. It is a good country for the manufacturer with a "concession;" a bad country for laborers. On the Sinú and lower coast laborers receive from 20 to 50 cents paper (equal 10 to 25 cents in gold) per day and board, which never includes bread.

PRESENT OPPORTUNITIES.

The present is a most favorable opportunity for American manufacturers to compete for Colombian trade. New dredges, pile-drivers, etc., are needed on the Dique. A marine railway, with machine-shop and foundry annex, is

to be established here, and $100,000 has been set apart for each of these. American machinery is preferred at equal prices. More steam-boats are wanted for the Dique. The contracts for the new wharves and tram-way are open to American competition also.

An American, Mr. C. S. Brown, has the contract to finish the Antioquia Railroad, and is now in the United States arranging for the necessary plant, steel rails, etc.

As New York is now only eight days from Carthagena, while England and Europe are three times as distant (by steamer), the advantages of the nearer market, in case of the breaking of any heavy piece of machinery, are evident. While in a country so infested with the white ant and the marine borer (*teredo*), creosoted timber and piles have only to be introduced to be in demand.

It is to be hoped American manufacturers will compete for these contracts, and by showing the superiority of American machinery, soon control this branch of Colombian imports. The skilled artisans, who would necessarily be sent out to construct and oversee these works, will naturally use and recommend the other manufactures of their own country.

As one means of showing the influenceof the re-opening of the Dique on commerce, I inclose a table of the exports from Carthagena during 1881, 1886, and 1887, and of produce from Barranquilla during same years:

Years.	Carthagena.		Barranquilla.	
	Kilograms.	Value.	Kilograms.	Value.
1881	10,437,009	$1,326,209	15,862,550	$9,055,669
1886	15,396,295	2,156,631	13,438,460	4,526,354
1887	17,924,147	2,882,578	14,985,240	4,137,711

It is evident that when these public works shall have been finished, Carthagena will have regained her ancient prestige, and that now is the time for American enterprise to make itself felt.—CARTHAGENA, *September 5, 1888.*

W. B. MACMASTER,
Consul.

COPPER MINES IN MEXICO.

[Transmitted by Consul-General Sutton.]

A quiet movement now going on here, having for its end the securing of the best and most accessible copper districts, is likely soon to attract public attention. Mexican and foreign miners operating here have been so intent on prospecting for silver, in buying up existing mines and acquiring new ones, that they have quite overlooked the fact that a good copper mine is about the best property which can be held in these days of fluctuating values. The important announcement that the great French syndicate, the Société des Métaux, is to be extended for ten years more, and that it is stronger financially than ever, will not be passed unheeded by sagacious business men. This announcement means that the copper syndicate feels strong enough to continue its work of buying up the products of the best mines in the

world, and every month we read of new acquisitions by the syndicate, ranging from Spain to Chili. We notice that the Boston Montana mine (United States) has just sold 45,000 tons for delivery over three years at 12 cents (gold) per pound. The world's stock of old copper metal (undoubtedly very large but still not inexhaustible) is a great factor in the problem of the future price of copper. But the soundest authorities agree that this factor is being slowly but surely eliminated from the problem. The present high price has brought out from its hiding places a very large quantity of old copper, and there are good observers of the metal market who predict that this source of supply can not long continue to yield much. Copper is being used more and more every year, especially in the modern applications of electricity. The newly-invented systems of transmitting power by electricity will create a demand for copper-wire twentyfold greater than the supply required for electric lighting and telegraphy. The best authorities the world over predict a vastly increased use of copper. In the United States copper is not being carried in stock to the extent that it was in former times, and for the simple reason that the great copper firms and companies can not secure it in sufficient quantities. Gradually the great French copper syndicate is gaining control of the world's market, and there seems good reason to believe that it will finally achieve its end, that of controlling the copper product of the world and thus regulating its price. All over the world holders of stock in copper mines find their property growing more and more valuable. These facts will explain the movement for the acquisition of copper mines now going on in this country, and may explain (certainly they are sufficient to do so) the negotiations now going on by a great London banking-house for the acquirement of a recently granted concession for a railway which will traverse a rich copper district here. While silver is greatly depreciated, and no one has confidence in its future, copper shows signs of steady advancement, and will be, for several years to come, a favorite field for speculation. We look for substantial results to the country from this advance in copper through the stimulation given to the development of a neglected source of wealth.

In our financial section this week we call attention to the strong movement in copper, and to negotiations going on here looking to the control of the copper product of this country. The Mexican copper importation into France for the first eight months of this year was 1,200 tons and into England 60 tons. Every one conversant with mining in this country knows that although this may not be a country especially rich in copper, yet its production will be largely increased, if the price of the metal continues to range high, as is very probable. The French copper syndicate has finally succeeded in controlling the output of the greatest copper mine in the United States, the Calumet and Hecla. In connection with this interesting subject we give a few paragraphs from our exchanges. The Engineering and Mining Journal says:

"Were it not that copper is so indestructible the world's present supply would certainly not meet the world's present demand. While, therefore, it is very likely that the high price has brought from its hiding place certain stocks of old metal, which have temporarily replaced new copper, there is no good reason to suppose that this supply is perennial. It is not the first time in the history of the copper trade that prices have been seriously affected by a sudden influx of old copper. After the great Napoleonic wars the dismantling of the British fleet threw on the market such large quantities of sheathing as to produce a deluge of copper and a terrible shrinkage in value. The price fell at the close of the war over 20 per cent. A similar sudden accession to stocks, followed by a decline in price, succeeded the Indian mutiny, because of the large treasures of copper held by the natives of Hindoostan which found their way into general circulation. Copper which stood at £124 in 1857 fell to £108 in 1858. But this surfeit of old copper was in time digested by the market, which has always absorbed, year by year, a certain normal proportion of old metal. What that factor is has never been determined, but it is certainly very large. There is, however, of necessity, more or less old metal which remains out of the usual channel of trade till carried into it by some such extraordinary impulse as the present excitement. If, however, purchasers on either side of the Atlantic reckon on this extra supply as coming from a perpetual source they will undoubtedly be disappointed."

The Boston Advertiser, discussing the copper monopoly, remarks:

"The product of all the copper mines in the world has been purchased by this great syndicate at a higher price than could ever be obtained under a healthy competition, and the market thus being cornered, the rate is marked up and both the producer and the syndicate are benefited, their entire profit coming, of course, out of the pockets of the users of copper, the effect being felt at once, as in type metal, the price of which has been arbitrarily advanced. Hardly another city in the world profits more largely in one respect than Boston, where the richest copper mines on this continent are owned. Those of our citizens who were fortunate enough to own the stocks of almost any copper mines have seen their wealth increase and their dividends expand. The speculation in copper stocks has been remarkable, and while the price has been advanced for copper only one-third, there is no reason why it may not be increased at almost any rate the syndicate may decide. It controls the supply the world over, and may do as it will." — *Mexican Financier, September 29, 1888.*

FOREIGN COMMERCE OF ITALY IN CEREALS AND BREADSTUFFS.

STATEMENT No. 1. — *Details of the foreign commerce of Italy in cereals and breadstuffs for the year ending December 31, 1887.*

Countries.	Wheat.		Indian corn.		Barley.		Oats.		Other grain.	
	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.
	*Tons.**	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*
Austria	16,488	2,252	86	9,854	3,110	109	2,705	89	1,956	2,170
Belgium	.....	.....	.....	.....	.....	.....	529	.....	.....	31
France	7,719	243	307	2,633	120	101	221	.....	573	4,090
Germany	.....	534	60	.....	283	.....	.....	.....	18	90
Great Britain	5,597	.....	.....	.....	.....	755	307	.....	986	408
Switzerland	.....	1,682	.....	4,123	187	39	14	314	134	1,170
Greece and Malta	4,405	.....	.....	.....	153	191	525	.....	49	154
Portugal	.....	.....	.....	.....	.....	350	.....	.....	.....	131
Holland	515	.....	.....	.....	.....	.....	.....	.....	.....	24
Spain and Gibraltar	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,829
Roumania	20,136	.....	758	.....	.....	.....	680	.....	.....	.....
Russia	523,223	.....	10,341	.....	4,531	.....	29,730	.....	3,147	.....
Turkey in Europe	148,939	.....	2,631	.....	2,707	.....	11,374	.....	9,582	22
Turkey in Asia	25,101	.....	.....	.....	121	.....	25	.....	127	53
British East India	184,681	.....	422	.....	.....	.....	66	.....	1,070	.....
China	674	.....	.....	.....	.....	.....	.....	.....	.....	.....
Egypt	566	.....	.....	.....	.....	.....	.....	.....	37	46
Tunis and Tripoli	19,850	.....	.....	.....	2,422	.....	.....	.....	.....	72
Algiers	2,190	.....	.....	.....	2,337	.....	704	.....	.....	435
Other African countries	886	.....	.....	.....	331	26	.....	.....	.....	47
United States and Canada	21,914	11	4,634	.....	.....	.....	.....	.....	473	281
Argentine Republic	8,399	23	1,889	.....	.....	.....	.....	.....	483	46
Uruguay	1,235	.....	.....	.....	.....	.....	207	.....	.....	.....
Peru	321	.....	.....	.....	.....	.....	.....	.....	.....	10
Other American countries	13,021	10	5,523	.....	.....	.....	.....	.....	635	657

* Ton = 2,000 pounds.

STATEMENT No 1. — *Details of the foreign commerce of Italy* — Continued.

Countries.	Rice, not shelled.		Rice, shelled.		Flour.		Bran.	
	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.
	*Tons.**	*Tons.*	*Tons.*	*Tons.*	*Quintals*†	*Quintals.*	*Quintals.*	*Quintals.*
Austria	44	524	2,082	10,909	22,236	2,163	68,534	2,099
Belgium	.....	.....	86	24	149	.....	.....	.....
France	14	.....	154	18,978	22,526	9,452	10,654	7,229
Germany	80	416	5,402	1,820	167	6,048	.....	535
Great Britain	14	.....	3,071	266	1,224	5,699	771	.....
Switzerland	.....	5	.....	1,912	26	9,627	1,293	1,323
Greece and Malta	.....	.....	286	921	236	205	13,552	.....
Portugal	.....	.....	.....	40	.....	.....	.....	.....
Holland	.....	.....	5,399	14	.....	11,739	.....	.....
Spain and Gibraltar	.....	.....	.....	143	.....	233	.....	346
Roumania	.....	.....	.....	.....	70	.....	.....	.....
Russia	.....	.....	42	1,768	40,084	.....	16,568	.....
Turkey in Europe	.....	.....	200	4,115	7,411	34	10,893	.....
Turkey in Asia	.....	.....	.....	1,928	3,533	.....	.....	.....
British East India	20,480	.....	220	.....	42	43	.....	.....
Japan	275	.....	.....	.....	.....	.....	.....	.....
Other Asiatic countries	3,260	.....	.....	.....	.....	.....	.....	.....
Egypt	.....	.....	.....	150	.....	51	553	.....
Tunis and Tripoli	.....	.....	.....	490	325	763	580	117
Algiers	.....	.....	.....	102	1,008	.....	.....	.....
Other African countries	.....	.....	.....	69	.....	166	214	.....
United States and Canada	.....	.....	13	1,100	.....	.....	.....	.....
Argentine Republic	.....	.....	.....	6,178	1,184	1,446	.....	.....
Uruguay	.....	.....	.....	1,441	.....	.....	.....	.....
Peru	.....	.....	.....	301	.....	.....	.....	.....
Other American countries	.....	.....	.....	517	382	45	.....	.....

*Ton = 2,000 pounds. †Quintal = 220.464 pounds.

STATEMENT No. 2. — *Totals of the foreign commerce of Italy in cereals and breadstuffs for the six months ending June 30, 1888, compared with same period in 1887.*

Cereals.	Imports.			Exports.		
	Six months ending June 30, 1888.	Six months ending June 30, 1887.	Difference for first six months of 1888.	Six months ending June 30, 1888.	Six months ending June 30, 1887.	Difference for first six months of 1888.
Wheat.....tons*	411,680	474,557	— 62,877	1,886	2,915	— 1,029
Indian corn.....do	423	15,424	— 15,001	11,554	6,085	+ 5,469
Barley.....do	5,526	7,289	— 1,763	386	1,279	— 893
Oats.....do	13,078	33,618	— 20,538	346	144	+ 202
Other grain.....do	9,769	8,960	+ 809	14,127	3,423	+ 10,704
Rice, not shelled.....do	6,245	17,800	— 11,555	660	386	+ 274
Rice, shelled.....do	1,003	15,284	— 14,281	7,305	35,351	— 28,046
Flour.....quintals†	21,851	58,748	— 36,897	17,848	17,988	— 140
Bran.....do	26,127	84,799	— 58,672	16,612	6,201	+ 10,411

*Ton = 2,000 pounds. †Quintal = 220.464 pounds.

ROME, *August 25, 1888.*

CHARLES M. WOOD,
Vice-Consul-General.

TRADE OF FRANCE WITH THE UNITED STATES.

The following statement shows the declared exports between the consular district of Cognac, France, and the United States for the year ending June 30, 1888:

Articles.	Quarter ending—				Total for the year.
	September 30, 1887.	December 31, 1887.	March 31, 1888.	June 30, 1888.	
Brandy	$98,662.71	$295,971.85	$170,073.39	$254,728.33	$819,436.28
Coloring matter				51.72	51.72
Corks		5.42			5.42
Decanters and vials		3.47		2.90	6.37
Fruit preserves		178.64			178.64
Meat pies		78.14			78.14
Olive-oil	191.38	324.65		58.96	574.99
Paper	5,963.87	3,592.21	908.16	730.85	11,195.09
Rum		139.79			139.79
Show cards		48.35		57.90	106.25
Wine	27.22	336.64	476.32	497.94	1,338.12
Total (in U. S. gold)	104,845.18	300,679.16	171,457.87	256,128.60	833,110.81
Total preceding year	227,981.07	321,841.82	210,347.14	171,439.06	931,609.09
Decrease during year 1887-'88					98,498.28

OSCAR MALMROS,
Consul.

EXPORTS FROM BARMEN TO THE UNITED STATES.

The following statement shows the value of declared exports from the consular district of Barmen to the United States during the four quarters of the year ending September 30, 1888:

Articles.	Quarter ending—				Total for the year.
	December 31, 1887.	March 31, 1888.	June 30, 1888.	September 30, 1888.	
Yarn	$29,633.23	$70,697.74	$14,466.50	$16,501.31	$131,298.78
Braids, bindings, and trimmings	349,311.91	343,522.70	188,393.25	154,360.82	1,035,588.68
Buttons and button stuffs	129,422.64	59,747.04	86,668.41	37,821.46	313,659.55
Dress and piece goods:					
Silk and silk-mixed	23,526.74	33,422.78	37,189.79	52,338.44	146,477.75
Woolen and woolen-mixed	183,987.47	92,749.52	142,611.05	121,646.55	540,894.59
Dyes and chemicals:					
Aniline, alizarine, etc	33,437.60	52,339.03	24,139.21	17,552.65	127,468.49
Hat-bands and ribbons	187,969.42	138,744.45	218,924.98	312,112.04	857,750.89
Plushes	18,995.16	22,108.83	12,901.77	9,954.84	63,960.60
Metal goods:					
Brass, bronze, and fancy	24,015.65	34,379.59	79,808.22	55,090.48	193,293.94
Hardware and cutlery	128,451.33	98,190.33	98,850.29	127,201.86	452,693.81
Iron and steel	119,243.30	129,023.62	125,884.77	155,486.84	529,638.53
Machines	10,875.33	4,813.02	584.71	2,512.23	18,785.29
Hams, sausages, etc	8,828.62	7,465.21	9,778.00	1,124.04	27,195.87
Various	20,900.04	45,641.95	5,508.11	35,930.26	107,980.36
Total	1,268,598.44	1,132,845.81	1,045,709.06	1,099,633.82	4,546,687.13
Total preceding year	1,079,682.23	1,181,405.78	1,564,569.45	1,758,050.04	5,583,707.50
Increase	188,916.21				
Decrease		48,559.97	518,860.39	658,416.22	1,037,020.37

JOSEPH FALKENBACH,
Consul.

AUSTRALIAN HORSES.

The success attending the recent exportation of horses from Sydney to California, China, and India has directed my attention to the condition of horses in Australia. The horse appears to do well in any part of the great island continent, and especially in New South Wales, where the climate and other conditions of the country are peculiarly adapted to stock-breeding of all kinds. So much, however, is said about Victorian wool and Victorian horses that one would suppose Victoria had all the sheep and horses and New South Wales none, whereas the latter colony has not only four times as many sheep as Victoria, but also exceeds her in the number of her horses, whilst the breed and conditions of both animals in New South Wales are quite equal if not superior to those of Victoria. It will, perhaps, be a matter of still greater surprise to those not conversant with the condition of live stock in Australia to learn that, notwithstanding the prominence given to horse-racing in Victoria through the unparalleled success of the Melbourne Cup, that the colony providing the sport has for many years failed to carry off the prize, and that at the last annual meeting she did not bring to the contest a single locally-bred horse. The only explanation offered for the failure, as far as I am aware of, is that Victorian stock farmers are more cautious than formerly about risking their money on the chances of racing. It can not be said, however, that the public are in any way growing weary of the sport, for race-courses are multiplying rapidly throughout the colony. If further evidence is wanted of the truth of the above it can be found in the increased enthusiasm displayed by the people upon every recurrence of their great annual festival, viz, the Melbourne Cup. This great carnival seems to absorb the attention of the people to the exclusion of everything else. It is usually held on the 1st of November in each year. The day is proclaimed a public holiday. At the last Melbourne Cup more than 100,000 people were present, and it was noticed that the excitement over the contest, especially amongst the fair sex, was even greater than on any previous occasion. Some of the ablest authors in Europe and America are employed to chronicle the event, and from six to seven columns of printed matter describing the proceedings are cabled to the Associated Press. The toilets of the ladies at this great festival are said to be more beautiful and brilliant than anything of the kind seen at Paris during the Second Empire. Vice-royalty is invariably present and the governor of the colony makes it a state affair by pinning the blue ribbon on the winning horse.

The introduction of horses into Australia appears to have begun with the arrival of the first settlers. Great care was taken to select only the best and strongest animals, and that perhaps is one of the reasons of the frequent mention of the superb condition of the horse, in the pages of the early historians of the colony. Subsequently the animals were greatly improved by the introduction of some of the best blood of Arabia. In time, however,

through careless breeding or other causes, the horse in Australia was allowed to deteriorate, and it is said that his condition was made still worse by the introduction of vicious blood from Spain, but I can find no record of Spanish horses ever having been introduced into Australia, and it is probable that the statement originated from the fact that many of the animals were allowed to run wild and when caught displayed the vicious habits said to be common to those of Spanish origin.

About the time of the discovery of gold (in 1850), horses were sold in Australia at a mere nominal sum, but they were generally of very light condition and in most cases were caught wild. The estimated number of wild horses at the present time in New South Wales is about 10,000, most of which are in the New England district. The riata or lasso appears never to have been used for catching wild horses. The early settlers being Britons were probably ignorant of its existence. The Australian stockman seems always to have relied upon his heavy long-tongued stock whip. This whip is made out of rawhide and is about 15 feet in length, having not unfrequently as many as twenty strands with a heavy filling of hide plaited in the end near the handle which is of wood, and about 10 inches long. The lash tapers neatly to a point and is sometimes tipped with silk but in most cases is composed of green hide. This whip in the hands of the average stockman is a powerful instrument of punishment. It will cut deep into the flesh and draw blood at every stroke. The stockman is usually so much of an expert that he has little difficulty in driving and yarding large herds of the wildest horses, indeed three or four average stockmen in Australia do more and better work in the way of mustering and driving stock than double the number of Mexicans could do armed with the lasso, and with far less cruelty to the animals.

NUMBER OF HORSES.

At the close of 1886 the number of horses in Australia was 1,372,756. At that time New South Wales had 361,363, but the number since then has increased to 389,146. The subjoined table shows the number of horses in each of the colonies of Australasia for the year ended December 31, 1886, being the latest statistics available for the whole of the group:

New South Wales	361,363
Victoria	308,553
Queensland	278,694
South Australia	168,420
Western Australia	38,360
Tasmania	29,684
New Zealand	187,382
Total	1,372,456

The number of horses is not so large in New South Wales as it was in 1881, when it reached 398,577, the highest figures known in the history of the colony. The drought caused a decrease in the years 1882 and 1883, but the

number has been increasing ever since. The subjoined table shows the number of horses in New South Wales for each year from 1877 to 1887, inclusive:

Year.	Number.
1877	328,150
1878	336,468
1879	360,038
1880	395,584
1881	398,577
1882	328,026
1883	326,924
1884	337,172
1885	344,697
1886	361,663
1887	389,149
Total	3,906,448

CLASSIFICATION.

All the colonies are well supplied with draft horses such as Clydesdales, Clevelands, etc. Victoria and New South Wales have the largest number of thoroughbreds, but South Australia and New Zealand are also well represented in this class of horses, indeed the number of thoroughbreds in proportion to population is unusually large in every one of the colonies. I am indebted to Mr. Alexander Bruce, chief inspector of stock, for the following table showing the classification of horses in New South Wales for the year 1886:

Class.	Thoroughbreds.	Ordinary.	Total.
Draft	15,473	90,509	105,982
Light-harness	12,294	87,820	100,114
Saddle	20,028	135,409	155,437
Total	47,795	313,738	361,533

The number annually fit for market is as follows:

Draft	17,000
Saddle	28,000
Light-harness	17,000
Total	62,000

The quarantine laws against the importation of horses have recently been repealed, and they are now allowed to land upon inspection. Unlike sheep, they can be sent here direct from the United States instead of by way of England.

The following table shows the value and number of horses imported into New South Wales for each year from 1877 to 1887, inclusive:

Year.	Number.	Value.	
1877	1,563	£28,951	$130,890.04
1878	792	29,922	145,615.41
1879	1,522	28,362	138,023.67
1880	1,034	26,862	130,723.92
1881	1,885	40,071	195,005.52
1882	2,023	63,099	307,071.28
1883	3,067	84,589	411,652.36
1884	4,453	114,260	556,046.29
1885	6,708	168,495	819,980.91
1886	3,310	105,190	511,907.13
1887	5,793	163,791	797,088.90

It will be seen from the preceding table that the largest number of horses admitted during any one year was in 1885, when it reached 6,708. The subjoined table shows the number and value of horses imported into New South Wales during 1886 and 1887, with the names of the countries whence imported:

Horses imported in 1886.

Country.	Number.	Value.	
Great Britain	14	£2,710	$13,188.21
Victoria	1,828	62,391	303,625.80
South Australia	38	1,000	4,866.50
Queensland	181	2,718	13,227.14
Tasmania	2	70	340.65
New Zealand	1,236	35,661	173,544.25
United States	11	640	3,114.56
Total	3,310	105,190	511,807.11

Horses imported in 1887.

Country.	Number.	Value.	
Great Britain	7	£2,520	$12,263.58
Victoria	3,743	128,282	624,284.35
Queensland	1,523	16,242	79,041.69
South Australia	89	1,283	6,243.71
New Zealand	406	13,627	66,315.79
Tasmania	19	1,370	6,667.10
United States	4	360	1,751.94
Fiji	2	107	520.71
Total	5,793	163,791	797,088.87

EXPORT OF HORSES.

The following is a table showing the number and value of horses, the produce of the country, exported from New South Wales for each year from 1877 to 1887, inclusive:

Year.	Number.	Value.	
1877	5,147	£84,339	$410,435.74
1878	3,679	66,441	323,335.12
1879	2,076	33,449	152,779.55
1880	3,952	61,619	309,868.86
1881	3,498	56,868	276,748.12
1882	2,919	65,818	316,410.09
1883	2,757	61,773	300,618.30
1884	4,972	128,998	627,768.76
1885	4,709	142,421	692,091.79
1886	4,916	126,121	613,767.84
1887	3,669	135,777	660,758.77

The heaviest export occurred during 1877, when the number was 5,147, and the smallest was in 1879, when it was 2,076.

The following is a table showing the number and value of horses, the produce of the colony, exported during the years 1886 and 1887, with the names of the country to which exported:

Horses exported in 1886.

Country.	Number.	Value.	
Victoria	3,088	£91,929	$447,372.47
South Australia	66	1,028	5,002.76
New Zealand	10	600	2,919.90
Queensland	520	10,728	52,207.81
New Caledonia	7	260	1,265.29
Fiji	34	870	4,233.85
United States	2	80	389.32
India	349	4,788	23,300.80
Honolulu	1	280	1,362.62
Singapore	33	1,220	5,937.13
Java	1	30	145.99
Western Australia	805	13,661	66,481.25
Total	4,916	125,474	610,615.19

Horses exported in 1887.

Country.	Number.	Value.	
Great Britain	6	£250	$1,216.62
Victoria	2,757	115,509	562,124.54
South Australia	82	1,225	5,961.46
New Zealand	3	55	267.65
Queensland	493	11,001	53,536.36
New Caledonia	23	750	3,649.87
Fiji	1	25	121.66
United States	8	1,070	5,107.15
Hong-Kong	1	55	267.65
India	265	5,135	24,989.47
Singapore	30	702	3,503.88
Total	3,669	135,767	660,746.31

Mr. Alexander Bruce, the chief inspector of stock in New South Wales, in his last annual report deplores the deterioration of saddle and light-harness horses. He states that:

Twenty-five or thirty years ago the saddle-horses of the colony, which were acknowledged by competent judges to be the finest in the world, are now seldom met with in any part of the colony. This opinion was strongly expressed by British officers from India, who came here for the purpose of purchasing horses for the Soudan cavalry. Even fairly useful saddle-horses for ordinary work are not readily procurable in any considerable number, while horses suitable for the cavalry or police service are scarce and a purchaser looking for a stout upstanding, well-bred, town-hack, or hunter is often months before he can meet with one. These remarks, as far as style, breeding, and scarcity are concerned, apply in a considerable degree also to light-harness and carriage horses; and so much is this the case that horses of both these stamps, as well as heavy draught, are being sent over to this colony from New Zealand in considerable numbers. I mention these facts with a view to give weight to the suggestion I again make, viz: That some of our breeders possessing the means and ability should give their attention to founding a confirmed breed of true Australian saddle-horses with size, shape, style and fire, which a good hack or cavalry horse ought to possess, and that others again might establish a confirmed breed of stylish, powerful light-harness and carriage-horses. To suit the different kinds of country and different climates, as well as for other purposes, we have the various breeds of short-horn, Hereford, Devon, Black-polled, Ayreshire, and Alderney cattle, all distinct and pure of their kinds, and for like reasons we ought to have distinct pure-bred saddle and distinct pure-bred light-harness horses of confirmed breeds.

Mr. Bruce finds fault with the almost universal practice in New South Wales of putting the race-horse to half or three-quarter breeds, as such a system tends to deterioration and disappointment, for it is breeding in direct opposition to the rules and principles of breeding. He says "if the Short-horn, Devon, and Hereford cattle were bred in the same way the result would be ruin to the farmers." By putting the race-horse to cross-bred mares we get, if the mare is light and small, comparatively useless weeds, and if the mare is large with most likely a good dash of cart-horse blood, the progeny may be of fair size, but most probably plain and coarse with an ill-fitted combination of the shapes and parts of sire and dam. Mr. Bruce shows, I think, conclusively in his report that the progeny of the race-horse and mongrel mare can not possibly have the qualities attributed to the Australian horse thirty years ago. "The horse of that period," Mr. Bruce says, "was the beau ideal of a saddle-horse with beauty, strength, size, and style, and, moreover, was capable of carrying a full-grown man 100 miles or more inside of twelve hours, a performance which is seldom recorded now." Even the Australian race-horse, he says, is in most cases a light, weedy animal of little use to any one but the gambler.

He concludes his report with the following:

There are, of course, a few powerful thoroughbreds, but their value for racing purposes puts them altogether beyond the reach of those who breed hacks. Until, therefore, some of our breeders take up the business in a systematic and practical manner by purchasing a thoroughbred sire, whose stock runs large and stout, with plenty of bone below the knee, selecting mares of the right stamp, carefully mating the progeny, exchanging all the mares whose stock

do not turn out sound, strong, shapely, and stylish, for others; and when stock of the right stamp are bred, continuing to breed strictly within his own lines, even though comparatively close at first, until the breed is thoroughly established and confirmed, and jealously preserving it when once it is so. That horses of such a stamp as here contemplated will eventually pay, even better than thoroughbreds, large though the prices obtained for them sometimes are, there is no doubt; for not only is the demand for our own ordinary use — to say nothing for cavalry and police — large, and good prices are now paid for horses of the right stamp, but India and China will always be buyers for far more horses of this description than we or the other colonies can breed, and there is no part of the world better adapted for breeding horses of this stamp than Australia, and no part of Australia better than New South Wales.

THOROUGHBREDS.

The race-horses of Australia have for many years been justly celebrated for their speed, and there is perhaps no other country in the world where so much capital is invested in racing in proportion to population as in Australia. The fastest time ever made in the colonies was at the last Melbourne Cup, the 2d of November, 1887 (on the twenty-seventh anniversary of that great racing carnival), when Dunlop made the 2 miles in three minutes and twenty-eight and one-half seconds. Dunlop was bred at the stud farm of Sir Thomas Elder, in South Australia. The sire of Dunlop was the celebrated Neckersgat from Eta (imported) by Parmeaean from Queen Lily.

Eighteen horses were entered for the Melbourne Cup, the smallest number since 1874, but what was lacking in numbers was more than offset by the superior quality of the animals. Silvermine and the Australian Peer were the favorites. The former won the Melbourne stakes, and the latter the Derby on the day previous. Very few thought that Dunlop would win and the betting was twenty to one against him, in fact, he was the dark horse in the race. After the start he soon showed the mettle that was in him. He was however, hard pressed by the Australian Peer and Silvermine. Just before the close it looked as if they would distance him far in the contest, but Dunlop was reserving his strength and with a wonderful flight of speed passed the others winning the cup easily by a length and three-quarters. The Australian Peer beat Silvermine by a short length for second place while Niagara was fourth with his head on Silvermine's quarter; then came at intervals Abercorn, Recali, Oakleigh, Algerian, Remus, Silver Prince (a magnificent New Zealand-bred horse), Cranbrook, Tranter, Paheka, and the Charmer. Sardius, the other competing horse, did not finish the course, being distanced early in the race.

The subjoined table shows the winners of the Melbourne Cup for each year since its inauguration in 1861, with the names of the sires, and the age, amount of weight carried, and the time of each winner:

Year.	Winner.	Sire.	Age.	Weight.	Time.
			Years.	*Lbs.*	*Minutes.*
1861	Archer	William Tell	5	77	3.52
1862	Archer	William Tell	6	142	3.47
1863	Banker	Boiardo	3	74	3.44
1864	Lantern	Muscovado	3	87	3.52
1865	Toryboy	Wollaton	*a*	98	3.44
1866	The Barb	Sir Hercules	3	95	3.43
1867	Tim Whiffler	New Warrior	5	123	3.39
1868	Glencoe	Lord of the Hills	4	127	3.42
1869	Warrior	New Warrior	6	122	3.40
1870	Nimblefoot	Panic	*a*	87	3.37
1871	The Pearl	New Warrior	5	101	3.39
1872	The Quack	Peter Wilkins	6	108	3.39
1873	Don Juan	Lucifer	4	96	3.36
1874	Haricot	Ladykirk	4	91	3.37½
1875	Wollomai	Ace of Clubs	6	106	3.38
1876	Briseis	Tim Whiffler (imp.)	3	88	3.36¼
1877	Chester	Yattendon	3	96	3.33½
1878	Calamia	Maribyrnong	5	114	3.35¾
1879	Darriwell	Tim Whiffler (imp.)	5	102	3.30¾
1880	Grand Flaneur	Yattendon	3	94	3.34¾
1881	Zulu	Barbarian	4	80	3.32½
1882	The Assyrian	Countryman	5	111	3.40
1883	Martini-Henry	Musket	3	103	3.30½
1884	Malua	St. Albans	5	135	3.31¾
1885	Sheet Anchor	St. Albans	*a*	109	3.29½
1886	Arsenal	Goldsborough	4	102	3.31
1887	Dunlop	Neckersgat	5	117	3.28½

AUSTRALIAN HORSES IN THE UNITED STATES.

The Australians, through the public press, are deploring the purchase of so many of their famous race-horses by Senator Hearst, Mr. J. B. Haggin, and other California capitalists. The loss of Darebin was described "as little short of a calamity to breeders." This magnificent horse was purchased by Mr. Bruce Lowe for Mr. Haggin at a cost of £1,980 ($9,634), and shipped to that gentleman in July, 1886. A few months afterwards an effort was made to purchase Darebin for the colony, and it said that an offer of £5,000 ($24,332) was made for him by cable, but that Mr. Haggin refused to part with his purchase. Darebin was sired by Musket, a famous New Zealand race-horse, whose extended pedigree I gave in my report on horse-breeding, published in No. 12, of the CONSULAR REPORTS, August, 1882. Subsequently Sir Moredred, another superb horse owned formerly by Mr. Henry Driver, the United States consular agent at Dunedin, was sent to California. This horse has attracted no little attention in America where its progeny commands extraordinary high prices. The next importation to America was Cheviot, a full brother to Sir Moredred. Cheviot is a bright bay, 16 hands high, head finely formed, nostrils wide, ears tapering, and neck, shoulders, and withers of marvelous beauty and muscular development. He is by Traducer out of Idalia, and has on his sire's side the famous Touchstone blood. The shipment of Cheviot was followed by True Briton, Goldsborough, and others. True Briton was foaled on the 29th of August, 1885, at Hobartville,

near Richmond, New South Wales. He was got by John Bull out of Ruby, and is now being trained for the Oakland race-course by Mr. Haggin, who predicts a brilliant career for him on the turf. He is of a beautiful glossy, black color, with slight, graceful limbs. The favor with which these horses were received in the United States induced Mr. J. K. Newton to purchase seventeen others for that market, six of which were shipped to San Francisco, on board the steam-ship Mariposa, on the 22d of February last. Five of these consisted of yearlings and the remaining one was the two-year-old colt Derelict, so favorably noticed at the centennial exhibition held here in January last. Derelict, although placed second in the list, would have carried off the prize if he had been properly prepared for the exhibition. He is the son of Robinson Crusoe, one of the most celebrated race-horses in Australia and winner of the Derby and St. Leger. The Stud Book of Australasia contains no record of better blood, for in his family are included such famous winners as Navigator, Trident, His Lordship, Angus, Scandal, Acolyte, Onyx, Sylvia, Charon, etc., all descendants of the celebrated Fisherman. In tracing his pedigree still further we meet with such famous names as Orvilla Bay, Middleton, Touchstone, Sir Hercules, Eclipse, etc. The second colt of Mr. Newton's purchase was a chestnut filly by Somnus (imported) from Geraldine by Yattledon from Atholine dam of Habena, Narina Blairgowrie and Huntingtower. The third animal was also a chestnut filly by Astrocas, sire Zeegus the First and Romping Girl. Romping Girl, as all Australian turfmen know, is the dam of Masquerade, the winner of the Metropolitan stakes and the Sydney Cup. The fourth colt was a beautiful bay by Epigram and Helen McGregor. Both sire and dam have a wide reputation. Epigram got Le Grand, winner of the champion race of the Australian Jockey Club, Derby, and St. Leger. The fifth colt was by Maribyrnong and Fair Duchess. This colt has the blood of some of the most celebrated race horses in Europe and Australasia. The sixth colt is by Somnus (imported) and Maid of the Hills, the former having in his veins two strains of the celebrated Touchstone blood. The record of these colts in America will be watched with no little interest in Australia. It is the first time that any of their blood has found its way to the States on the Pacific slope, or indeed in any other part of the United States. For some reason its value has been overlooked there, and it was not until it attracted attention in Australia that American stock-farmers sought to mingle it with that of some of their own famous racers.

In addition to the horses already mentioned about half a dozen others have been purchased for the American market, and Mr. Andrew Towns, of Hobartville, who has the largest and most complete stud farm in Australia, is paying special attention to breeding horses so as to foal to American time.

The seasons in Australia being directly opposite to those in America, it is arranged that the foal shall count from the 1st of August instead of the 1st of January, as in the United States. Mr. Towns's experiment of breeding to American time, it is thought, will prove practicable. To illustrate the interest taken in Australian horses by Americans I will mention that the Horse.

Breeding Association of the Pacific Slope has announced its intention to grant certain concessions to all horses foaled south of the equator, so as to compensate for the disadvantages they labor under in regard to age, and it is said that other breeding establishments in America will make similar concessions.

AMERICAN TROTTERS.

Very little attention has been paid heretofore to the training of roadsters in Australia. The taste of the people, however, is now changing in that respect. The trotting matches at Elsternwick Park, near Melbourne, and those of the Sydney Park Driving Club, at the Agricultural Grounds, near Sydney, are daily becoming more and more popular, and it is said that that this sport is also becoming popular at Adelaide and other cities in Australia. This should be very gratifying to the public inasmuch as the sport of trotting leads to something of a direct practical value. The race-horse, strictly speaking, is of little use or interest, except to the turfmen, and is seldom seen off the race-track, whilst the trotter is not only a useful animal in the buggy and carriage, but is a fascinating sight on the road, giving pleasure and recreation to thousands in every day life. Amongst those to whom credit is due for encouraging the sport of trotting in Australia are Dr. Weir, of Melbourne, the Hon. James Miller and Dr. George F. Slate, of Sydney, and Mr. Andrew Towns, of Hobartville. The last-named gentleman purchased in the United States the celebrated stallion Contractor. Mr. Towns also purchased for Australia Honesty and Child Harold. The latter is by Harold, the sire of Maud S. Dr. Slate has recently imported from America the fine stallion Doncaster and several valuable mares for breeding. It was through the influence of Dr. Slate that Mr. F. B. Baldwin, of New York, visited the colonies. Mr. Baldwin first introduced here the modern method of booting and driving, and the method has become so popular that almost every horse on the track is now provided with boots. Dr. Slate is the owner of Heron, one of the fastest trotters in Australia. Heron is full brother to Belle Hamlin, for which Mr. C. J. Hamlin refused the sum of $30,000. Belle Hamlin's record for 1 mile is two minutes, thirteen and three-quarter seconds. The centennial champion prize for the best colonial-bred trotting stallion was won by Burlington, owned by Mr. A. L. Faithful, of this colony. This valuable horse was secured to New South Wales through the visit of Mr. E. R. Deane to the United States in 1884. Mr. Deane traveled from Maine to California in search of suitable horses, and finally purchased two mares with foal by Bob Mason, whose sire was Echo son of Rysdyke's Hambletonian. The result of the purchase was Burlington and a filly, both foaled in New South Wales in June, 1885. Burlington is a magnificent horse for his age, a perfect picture of strength and symmetry.

THE MULE.

The almost total absence of the mule in the Australasian colonies has been the subject of much comment on the part of Americans visiting, and several attempts have recently been made to popularize this useful animal in various

parts of the great island continent. Its good qualities for packing purposes are said to have just been discovered in the northern territory. A mule breeding establishment has been started by Messrs. Tooker Brothers, at Lenra Station, near Rockhampton, Queensland. These gentlemen have secured the services of a pure-bred Spanish jack at a cost of £157.10 ($766.47), and mules 17½ hands high have been produced. The value of the mule has long been fully appreciated by those accustomed to its use. The Spanish colonies in North and South America employed it almost exclusively for climbing among the mountains in Chili, Peru, and Mexico, for which it is so well adapted.

The Spanish colonists never traveled with much fodder, and the mule and its father the jack suited them in being able to pick up a living on the plants in the mountainous countries. The use of the mule has given much satisfaction in California, where it is not only used as a pack animal, but for plowing and reaping in the wheat fields. It is not claimed that the mule can do more work than the horse, but it can live on less and go longer without water, and stand more abuse, hence its suitability to mountainous districts, but in a country like Australia it is probable that the horse and ox will always be preferred and especially when large, strong Clydesdales and Clevelands can be purchased at the present low rates prevailing in Australia; moreover, the camel, which has been successfully introduced into Australia, is a long way ahead of the mule as a packing animal. Camels were brought here in the early history of the country and were found to do well. Afterwards they were allowed to run wild and when recaptured proved to have deteriorated very little. They are now extensively used throughout the northern territory, especially for packing, to and from the gold mines, where the distance is great and the supply of water short along the route. — SYDNEY, *April 10, 1888.*

G. W. GRIFFIN,

Consul.

AUSTRALASIAN RAILWAYS.

There are more miles of railway in the Australasian colonies in proportion to the population than in any other country in the world, with the single exception of the United States of America. The number of miles of railway open in the whole of the group on the 31st of December, 1887, was 3,305, and estimating the population at 3,500,000 there would be 380 persons to every mile of line. In Great Britain there are 1,895 persons to every mile of railway; in France, 2,110; in Germany, 2,063; but in the United States, where there are nearly one-half as many miles of railway as in all the rest of the world put together, the population is only 370 to every mile of line.

The subjoined table shows the number of miles of railway open in each of the Australasian colonies at the close of 1887:

	Miles.
New South Wales	1,924
Victoria	1,888
Queensland	1,655
South Australia	1,572
Western Australia	154
New Zealand	1,809
Tasmania	303
Total	9,305

It will be seen from the preceding table that New South Wales is in advance of every other colony in the group and that Victoria ranks second and New Zealand third. In addition to the lines already open there are nearly 2,100 miles under construction, and of the latter New South Wales has 367, Victoria 316, South Australia 417, Queensland 637, West Australia 46, Tasmania 138, and New Zealand 171 — giving a total of 2,092 miles. Other lines are shortly to be built, and large sums have been voted for the purpose in every one of the colonies.

The first railway projected in Australia was in 1846, when it was proposed to connect Sydney with Goulburn. A survey was made to Parramatta and Liverpool in 1848, and on the 3d of July, 1853, the first turf was turned by the Honorable Mrs. Keith Stewart in the presence of her father, Governor Fitzroy, and a large number of spectators. The road was opened between Sydney and Parramatta, a distance of 15 miles, on the 26th of September, 1855. A line was projected in 1853 from New Castle to Maitland, but it proved a failure. Both lines were started by private companies, and as neither was successful they were transferred to the Government. The first railway opened for traffic in South Australia was in 1856. It was 7½ miles in length and connected Adelaide with Semaphore. The North Line in the same colony was opened to Smithfield in 1857, and was 18¾ miles in length. In 1870 there were only 948 miles of railway open in Australasia of which New South Wales had 335, Victoria 274, Queensland 206, South Australia 133, West Australia *nil*, Tasmania *nil*, New Zealand *nil* — total 948. The rapid increase in the number of miles since that period affords a striking illustration of the marvelous energies and capabilities of the people.

The following table shows the number of miles of railway in operation in Australasia for each year from 1870 to 1887 inclusive:

	Miles.
1870	948
1871	948
1872	948
1873	1,429
1874	1,781
1875	2,323
1876	2,783
1877	3,472
1878	3,778
1879	4,339

	Miles.
1880	4,852
1881	5,471
1882	6,207
1883	6,715
1884	7,497
1885	8,045
1886	8,903
1887	9,305

There is now railway connection between each of the metropolitan cities of Australia, viz: Sydney, Melbourne, Adelaide, and Brisbane. Three trunk lines start from the Queensland coast and stretch for many miles toward the far west.

THE HAWKESBURY BRIDGE.

The magnificent bridge now rapidly approaching completion is of special interest to Americans from the fact that it is being built by the Union Bridge Company, of New York. It is intended to connect Sydney by a double line across the Hawkesbury River with the Great Northern system of railways. As the Queensland road has been completed to the New South Wales border the bridge over the Hawkesbury is the last remaining link to connect Sydney and Brisbane. The road from Sydney to the Hawkesbury necessitated very heavy work, such as tunneling, rock cutting, and long lengths of timber trestles. After leaving the junction, 14 miles west of Sydney, the Parramatta River is crossed by a wrought-iron bridge with six openings of 150 feet each; the road leads through a very rough and uninviting country. The point chosen for crossing the Hawkesbury is 15 miles from the sea-coast and 36 miles from Sydney. The railway, after passing over a shallow branch of the river, enters a tunnel through Long Island, and emerges on the banks of the main channel about 45 feet above high water.

The Hawkesbury River takes its rise on the eastern slope of the Blue Mountains, and with its branches drains an area of about 8,700 square miles. The tide at the point of crossing varies from 3 to 6 feet, and runs, under certain conditions, from 3 to 4 miles per hour. The total length of the bridge is 2,896 feet. There are five spans of 416 feet each between centers of piers, and two spans of 408 feet each. It is, in fact, the largest bridge in the southern hemisphere, and in one respect unparalleled, viz, it having the deepest foundation in the world. Sound bottom is only reached at a depth of 170 feet from water level. Mr. Charles A. Goodchap, the New South Wales commissioner for railways was especially desirous that competition for this stupendous work should be thrown open to the whole world; therefore, instead of calling for tenders in the usual way from plans furnished by the chief engineer, it was determined to invite manufacturers to submit their own designs and tender to them. A board composed of the following gentlemen: Douglas Galton, late captain R. E. C. B. D. C. L. F. R. S.; W. H. Barlow, C. E., past president of the Institute of Civil Engineers, and G. Berkley, C. E., vice-president of the Institute of Consulting Engineers to the Great Indian

Peninsular and Natal Railways, were appointed to receive and report upon the tenders. It was at the same time arranged that Sir John Fowler, the Government consulting engineer in London, should furnish an independent report upon the tenders and designs, and that the whole should be subject to the final recommendation of Mr. John Whitton, the engineer-in-chief of New South Wales. The plan of inviting manufacturers to tender their own designs, although not uncommon in the United States was hitherto without precedent in the colonies and very naturally attracted both here and in Europe no little attention. The tenders varied from £296,350 ($1,441,703) to £702,384 ($3,418,151). I am indebted to the commissioner for railways of this colony for the subjoined summary of the tenders and designs which the board of engineers considered eligible:

Name of tender.	Amount.	Time.	Main features of design.	
			Piers.	Superstructure.
Edgemoor Iron Company, Wilmington, Del., U. S. A.	£296,350	2 years...	20 cylinders, in pairs, 20 feet diameter at base.	American lattice type, pin fastenings; span, 292 feet.
Union Bridge Company, New York.	327,000	2½ years.	6 caissons, 52x24 feet at base, with semicircular ends.	American lattice type, pin fastenings; span, 415 feet.
Fforde & Young, London..	377,500	3 years...	20 cylinders, 10 feet 6 inches, in pairs.	Cantilever, lattice type.
Royce & Co., and Butterley Company, London.	403,367	3 years...	24 cylinders, 16 feet, in pairs..	Riveted lattice, curved upper boom; main spans, 238 feet 6 inches.
A. Handyside & Co., England.	456,000	3 years...	22 cylinders, 15 feet, in pairs..	Riveted lattice, straight top; main spans, 262 feet.
Arroll Brothers, Glasgow, Scotland.	580,000	4 years...	7 caissons, 70x33 feet, elliptical.	Riveted lattice, curved upper boom; main spans, 432 feet.
Reichenbach, Godfrey & Jones, London.	466,032	No time..	8 caissons, rectangular, 54 feet 3 inches by 22 feet.	Cantilever lattice, continuous, 392 feet and 311 feet alternately.
John Dixon, London.....	486,100	2 years...	36 cylinders, 10 feet, in groups of four.	Riveted lattice, curved upper boom; spans, 251 feet.
R. M. Parkinson, London..	584,898	4 years...	8 cylinders, 40 feet in diameter.	Riveted lattice, continuous throughout; spans, 338 feet.
Fives-Lille & Co., Paris....	515,004	4 years...	6 caissons, circular, 57 feet 5 inches diameter at base.	Bow strong, with stiffened arc; spans, 550 feet.
D. Munroe, Melbourne, Victoria.	702,384	3 years...	20 cylinders, 14 feet, in pairs.	Fish belly, in lattice type; spans, 389 feet 6 inches.

Sir John Fowler recommended that the board should adopt the plans and designs of the Union Bridge Company, of New York. The tender of the other competing American firm, the Edgemoor Iron Company, was lower than that of the Union Bridge Company, but Sir John Fowler thought that as the former had to sink twenty piers against six of the latter, it would be better to accept the one with the least number of piers, as it was evident that on account of the difficulty of sinking caissons and cylinders, the reduced number and larger size of the caissons, had a decided advantage. Sir John also thought that the larger spans of the Union Bridge Company's superstructure were superior to the smaller ones of the Edgemoor Company. Mr. Whitton, the New South Wales engineer-in-chief, also approved of the tender, plans, designs, etc., of the Union Bridge Company, with certain modifications and alterations, and for these changes the company was to receive the additional sum of £22,800 ($110,956), thus making the total cost of the bridge £355,-

800 ($1,731,504). The contract for making the piers was awarded to Messrs. Anderson & Barr, who performed so successfully similar work for the Atchafalaya bridge on the Texas and Pacific Railway in 1883, where the foundations were sunk to a depth of 125 feet.

I visited the Hawkesbury bridge on the 29th of March last in company with Capt. W. Law, of this city, who for some time has taken much interest in the progress of the work there. Mr. J. F. Anderson, senior member of the firm of Messrs. Anderson & Barr, afforded us every facility for seeing the bridge. Mr. Anderson stated that there was every reason to believe that the bridge would be completed in contract time, and that his own part was so far advanced as to allow him to proceed shortly to the United States. From information placed at my disposal by Mr. Anderson, I learn that each of the six piers consists of a wrought-iron caisson, with three central tubes which assume a conical shape towards the bottom, thus forming a cutting edge. The caisson is sunk by excavating through the tubes. When complete, or sunk in a proper position, the caisson and tubes are fitted with concrete, and ashler masonry is continued from low-water mark to the underside of the girders, which rest upon the stone-work. No. 1 caisson was commenced on the 4th of August, 1887, and finished on the 23d of last November; it has been sunk to a depth of 56 feet in the bed of the Hawkesbury, and 3,062 yards of concrete were used in filling it, the total weight of caisson being rather more than 213 tons. No. 2 caisson is in course of construction, about 240 tons of iron having been used up to date. The third caisson is also in course of construction, 278 tons of iron having been used so far as the work has gone. No. 4 was commenced on the 23d of February, 1887, and completed to receive masonry on the 27th of last July. This caisson has gone down to a depth of 120 feet in the river bed. It weighs more than 287 tons, and 4,628 yards of concrete were used to fill it. No. 5 caisson was put in position on the 6th of December, 1886, and although some difficulty has been experienced in keeping it within line, the trouble is being overcome and the work rapidly pushed forward, 295 tons of iron-work and 3,000 yards of concrete have been used in the construction of this pier. No. 6 caisson was commenced on May 6, 1887, located on the 18th of the same month, and the work on it is proceeding satisfactorily. The following figures show the depth of water at the several piers at low tide: No. 1 pier, 37 feet 6 inches; No. 2, 40 feet; No. 3, 40 feet; No. 4, 20 feet; No. 5, 18 feet 6 inches; No. 6, 46 feet 6 inches. Messrs. Morse & Ryland are the contractors for the superstructure and they have their work well in hand. The superstructure is being erected on a huge punt, 330 feet long, 60 feet wide, and 10 feet deep. The punt is built in forty-eight water-tight compartments. A gigantic trestle more than 40 feet high has been firmly built upon the punt, and upon this trestle each span required for the bridge will be constructed. When the span is completed the punt will be towed up the river to a position between the piers intended to receive it. This operation will take place at high water, and as the tide flows back again into the Pacific the span will slowly settle

down into its proper position on the piers. When the whole of the spans are completed the bridge will be ready for use. All the superstructure is of mild steel, having an ultimate tensile strength of not less than 67,000 pounds and not more than 73,920 pounds per square inch of section. One of the requisites is that when heated to a cherry red, and cooled in water of 82°, the test piece cut either lengthwise or crosswise from the material must bend double without flaw or crack to a curve having an inner radius of one and a half times the thickness of the plates.

COST OF CONSTRUCTING AUSTRALASIAN RAILWAYS.

The total cost of the construction of the Australasian railways is estimated at £85,503,210 ($416,091,360). The average cost per mile for several years has been about £10,102 ($49,161). The highest average, £13,634 ($66,349), is in Victoria, and the lowest, £4,038 ($19,650), in Western Australia. The following table shows the average cost per mile in each colony:

Victoria	£13,634 =	$66,349
New South Wales	11,994 =	58,368
Tasmania	7,820 =	37,990
New Zealand	7,656 =	37,190
South Australia	6,862 =	33,371
Queensland	6,614 =	32,181
Western Australia	4,038 =	19,650

The variation in the cost of construction is principally due to the condition of the country over which the road is built. Sometimes cheaper material is used than at others. The cost of construction is nothing like as heavy as in Great Britain and other European countries.

The estimated cost of the railways in Great Britain is £49,984 ($243,246) per mile. In Belgium it is £36,522 ($177,736), and in France £27,580 ($134,217). Mr. Charles A. Goodchap, the New South Wales commissioner for railways, to whom I am indebted for much of the material of this report informs me that when the colonies followed the principle of English railway construction, such as the adoption of air lines instead of surface lines, they were found to work badly. To illustrate the difference between the two methods, I will mention that air lines are those in which the rails are at all times intended to be built above flood levels like the lines in this colony and which cost about £12.000 ($58,398) per mile. Surface lines are built on the principle of following the natural surface of the ground as nearly as possible without appreciably obstructing the natural flow of flood waters, that is, they are built intentionally below flood level. The cost of such lines does not exceed £2,700 ($13,129) per mile. There are 600 miles of surface lines in the colony of Queensland, and the cost has not exceeded £2,700 ($13,129) per mile, even at a distance of 300 miles from the nearest sea-port. Mr. Goodchap is of opinion that surface lines are better suited to new countries than those built upon the English method. He says that the surface lines are ca-

pable of carrying the traffic for at least twenty years to come. On parts of the central division and the northern division in Queensland, where surface lines have been adopted, the sleepers and rails are of the same weight as in other parts of the colony, but the amount of ballast is considerably less, averaging only from 500 to 700 cubic yards to the mile and does not reach above the bottom of the sleepers.

I learn from an able and elaborate paper, prepared for me by Mr. Max Thomson, A. M. Institute of Civil Engineers, that very few, if any, embankments occur on the surface lines introduced into Queensland, and that there are no cuttings except for the necessary gradients. Where the line crosses water-courses or rivers it does so by means of low level bridges or fords providing only sufficient headway for ordinary storm water, but in cases of heavy floods the railway crossings are entirely submerged, in one case as much as 50 feet. These heavy floods, however, subside quickly and leave the railway track clear for traffic. In New South Wales until recently arched culverts were constructed of stone or brick, but lately they are made of concrete. The same remarks apply to tunnels. Open culverts and bridges up to 26 feet span are constructed in the first instance with timber superstructures on pile piers, but as occasion requires them to be removed they are reconstructed with iron superstructure on brick or iron piers.

The surface lines in Queensland were introduced by Mr. R. Ballard, M. I. C. E., but a new scheme of surface lines has just been proposed for that colony by Mr. Phillips, C. E. The main feature of Mr. Phillips's scheme is to adhere as closely as possible to the natural surface of the ground in order to avoid embankments in places with the attendant interruptions to natural draining, thus doing away with the necessity for frequent flood opening. Ballast is not employed in the ordinary way, the sleepers being mostly filled in with the adjacent soil. To avoid troubles Mr. Phillips has designed certain kinds of steel sleepers. The sleepers, although intended for a narrow gauge, can be made to suit any gauge. Those for the narrow gauge are 3 feet 6 inches, and 5 feet long, and 8 inches wide at the top, and 10 inches at the bottom and 8 inches deep. They are so laid that the bottom of the rail reaches 4 inches above ground, the space above ground being packed with soil taken from adjacent land.

WORKING EXPENSES.

The working expenses of the Australasian roads are usually heavy both on the continent and on the islands of Tasmania and New Zealand. They are perhaps heavier in New South Wales than in any of the other colonies, the estimate for New South Wales being £834 ($4,058) per mile against £797 ($3,878) per mile for Victoria, £352 ($1,713) for West Australia, £340 ($1,649) for South Australia, £307 ($1,494) for Queensland, and £305 ($1,484) in New Zealand and Tasmania. The net earnings and percentage to capital in the five Australian colonies during the year 1887, were as follows:

Colony.	Net earnings.	Proportion of working expenses.	Net earnings.	Percentage to capital expended.
New South Wales	£667,078 = $3,246,334	69.12	£373 = $1,810	2.901
Queensland	216,122 = 1,051,572	68.82	139 = 676	2.128
South Australia	178,438 = 868,568	67.50	164 = 798	2.37
Victoria	1,025,962 = 4,992,843	38.18	573 = 2,788	4.15
Western Australia	2,694 = 13,106	87.05	37 = 180	.70

The heavy working expenses in New South Wales are principally due to the heavy grades of the roads. On the Western Line, which crosses the Blue Mountains, the ascent is affected by zigzags with grades of 1 in 30 and curves of 8 chains radius which also occur at various points until the summit of the range is reached. Up to this point the earth works are of a heavy nature, and in many places deep cuttings and long tunnelings are met with. On the Northern Line a gradient of 1 in 30 for 3 miles is employed to ascend the mountains, the remaining part of the line being constructed with gradients of 1 in 40 as a maximum, with heavy cuttings and tunnelings. After descending the mountains the road is comparatively smooth. In Victoria the works are not usually as heavy as in New South Wales, the heaviest gradients in Victoria being 1 in 40; the minimum radius of curves is 15 chains, and the cuttings and tunnels are not extensive. In New South Wales the locomotives in many cases have to be assisted by pilot engines. Indeed, until the commissioner for railways introduced the consolidated locomotive from the United States, it was no uncommon thing to see ordinary passenger trains drawn by two locomotives over comparatively level country. The consolidated locomotives are capable of drawing nearly double the weight of the old ones.

The working expenses of the roads in New Zealand are very heavy, but the introduction of American locomotives and other rolling stock is causing a marked reduction in the expenditures. At the end of March, 1887, the revenue from the railways in New Zealand was £998,768 ($5,229,270), and the expenditures £699,072 ($3,401,350). The tonnage during the year was 1,747,754, and the number of passengers carried 3,426,407. The subjoined table shows the amount of traffic in local production in New Zealand for each year ending March 31, from 1879–'80 to 1886–'87:

Year.	Wool.	Timber.	Grain.	Minerals.	Horses and cattle.	Sheep and pigs.
	Tons.	*Tons.*	*Tons.*	*Tons.*	*No.*	*No.*
1879–'80	41,895	149,428	240,144	321,060	30,393	260,816
1880–'81	42,387	169,695	421,142	406,266	27,230	280,683
1881–'82	44,681	192,905	375,725	433,659	32,511	319,837
1882–'83	51,703	197,231	367,428	510,088	37,455	449,470
1883–'84	62,066	183,449	432,223	574,312	39,230	656,612
1884–'85	68,523	178,909	414,590	618,512	43,096	696,790
1885–'86	74,778	202,572	413,847	669,081	46,152	822,028
1886–'87	82,963	175,581	345,254	719,579	46,600	904,582

IMPORTS OF RAILWAY MATERIAL.

The average annual imports of railway material into the Australasian colonies is about 85,000 tons. Of this New South Wales imports a larger quantity than any other colony. Her imports of such material during the year ended December 31, 1887, was 17,181 tons valued at £298,327 ($1,451,590).

The subjoined table is an abstract of the returns of the material imported by the New South Wales department for railways during the year 1887: Number of ships, 128; number of tons, 27,181; value of material shipped, £298,327 ($1,451,590); amount paid for freight, £20,125 12*s.* 10*d.* ($97,941.02); amount paid for insurance, £2,361 17*s.* 8*d.* ($10,341.12); average rate of freight per ton, 17*s.* 9¾*d.* ($4.26½); average rate of insurance, 1*s.* 9*d.* ($0.42).

ROLLING STOCK.

The commissioner for railways in a recent report directs attention to the fact that the engines in use on the lines in New South Wales are more heavily worked than in any other country in the world, with the exception of the United States. During last year fifty-two locomotives ran between 30,000 and 40,000 miles, and three over 40,000 miles. I am indebted to the commissioner for railways for the subjoined statistics showing the average mileage per engine on roads in the various parts of the world:

Germany	11,870
Austria	11,842
Belgium	13,335
France	16,798
Italy	15,118
Great Britain	18,395
India	19,606
United States	22,583
New South Wales	20,362

The reader will readily understand from the preceding table the amount of work required by the New South Wales engines. It appears from some valuable and interesting notes placed at my disposal by the commissioner for railways that he is decidedly in favor of increasing the hauling power of the engines by abandoning the English formula and adjusting the distributing weight of American practice. The commissioner states: "The question of the tare of vehicles proportioned to their carrying capacity is one of great interest in all parts of the world, but in the United States, by the aid of the Car Builders' Association, it has not been a scientific question, but by discussion and experiment has been elevated to a science in itself." In England the rolling stock is very heavy, and it is seldom that the freight on their lines exceeds the weight of the vehicle. As the roads are level their engines can haul 800 tons in one load, 400 tons being considered freight. The business is, therefore, a paying one in spite of the excessive weight of the tare. If freight were as low as ½*d.* (1 cent) per mile, the revenue would be 15*s.* 8*d.*

($3.81) per train mile. It is said however that generally, except in carrying coal, they do not get train-loads of 400 tons net. The exigencies of the traffic would not admit of trains being kept until such loads accumulated, so that only special classes of traffic such as coal, ironstone, slate, etc., can be hauled at the low rate quoted. The commissioner says: "If we should apply the principle of constructing our rolling stock to English practice we would be unable to earn anything above the cost of working. In the early days of our railways our rolling stock was designed to English patterns, but in recent years we have not only imported American designs, but we are aiming to construct our stock on principles laid down by the Locomotive Engineers and Car Builders' Association of the United States. We want engines which, while not weighing more than 12 tons on any one pair of wheels, will take 200 tons up a grade of 1 in 40 for 3 miles, and we want vehicles which will admit of two-thirds of this 200 tons being revenue-saving freight. We will have the sympathy of the railway experts all over the world who, having heavily graded lines to make, know the importance of the question, and we expect special encouragement from the United States, which, by precept and example, has led the van of progress in this important direction."

GAUGES.

The Australasian colonies have utterly failed to profit by the experience of other countries in regard to the question of constructing their railways with one uniform standard gauge, and the result is that the roads in no two colonies touching one another have the same gauge. The width of the gauge in New South Wales is 4 feet 8½ inches. In Victoria it is 5 feet 3 inches. In South Australia there are two gauges — 5 feet 3 inches and 3 feet 6 inches. In Queensland, Tasmania, and New Zealand the gauge is 3 feet 6 inches. The Victorian roads touch the border of New South Wales in three places, and freight passing from one colony to the other has to be tranferred to other cars at considerable expense, not to mention the delay and other inconveniences resulting from such course.

A singular fact in connection with the question of a uniform gauge is that although New South Wales, Victoria, and South Australia began the construction of their roads at nearly the same time, it was nevertheless determined to have a different gauge in each colony. While it is admitted that at first some advantage in economy is gained by the construction of light narrow-gauge roads in thinly populated districts, there can be no doubt, as experience has shown, that in the long run a substantially built road of standard gauge is the best plan to adopt. The policy now recommended is to put down in the first instance cheap lines rather than light ones, using heavy rails, but effecting a saving in sleepers and ballast, so that as traffic increases the lines can be made suitable for it at little additional expense. One of the advantages New South Wales experiences in having a standard gauge is that she is enabled to procure locomotives and other rolling stock of precisely the same patterns as those in use in the United States and Great Britain. The confu-

sion and inconvenience incident to mixed gauges in the colonies will sooner or later lead to the establishment of a uniform gauge, and it is said that an intercolonial commission will shortly be appointed for the purpose of settling definitely this vexed question.

SIGNALING.

The semaphore method of signaling is principally used on the Australasian railways. Each station or junction is provided with home or distant signals for trains traveling in both directions. At stations where interlocking is not used the signals are worked by the ordinary adjusting pull-overs. All stations on the main surburban lines and on the principal country lines adopt the interlocking method. The machines are the same as those on the English lines. A special arrangement for interlocking is employed at small roadside sidings where no one is in charge. The conductors or guards—as they are called here—wishing to shunt or switch the sidings, are compelled to fix all necessary signals before they can open the points to shunt the same. When the sidings are not in use on the main lines signals are made to exhibit "All right," and the levers of the machines are locked up in order that strangers can not tamper with them. The conductors requiring to switch the sidings are provided with a key to unlock the machine. After unlocking the machine they are compelled to set the points in proper position again and securely bolt them before the main line signals can be lowered to "All right," and the signals must be lowered before the key can be taken out of the lock, to enable the conductors to proceed on their journey. At small roadside sidings, which can be conveniently switched by trains carrying the time staff, fixed signals are used. All sidings in direct communication with the main line are provided with either stop-blocks or safety-points to prevent vehicles from being moved or blown foul of trains running on the main line. The system of fixed signals in Victoria, South Australia, and Queensland is similar to that in New South Wales, but interlocking the points with the signals is more extensively adopted in Victoria and South Australia than in New South Wales and Queensland. The system appears to be adopted on the overland route between Adelaide and Serviceton and between Serviceton, Melbourne, and Wodonga in order, it is said, to provide additional security for express trains.

THE GOVERNMENT AND THE RAILWAYS.

All the railways in Australasia, with the exception of one or two very short lines, belong to the various colonial governments. These roads were built principally through the means of large loans negotiated by the agents-general, and their value forms one of the principal assets for the public debt. The policy of giving the control of the railways to the State is very seriously questioned in many quarters. One of the principal objections to it is the the amount of patronage it controls and the liability to use such patronage for political purposes. Another objection is that under the State system the expenditures are greater and the receipts smaller than when under the man-

agement of private companies. It is urged, however, by those who support the State system that the reason government-owned railways experience so much difficulty in making fair returns for the amount of capital invested is that as soon as a profit is shown the public insist upon concessions in rates or increased facilities, both of which are practically an amelioration of taxation. The difference between a State and a private railway is explained on the ground that as traffic develops in one case the public get immediate benefit from lower charges and greater facilities, and in the other the share-holders obtain a larger dividend at the end of each year's working. The railways in New South Wales at present are not as remunerative as those of Victoria, but it must be remembered that the conditions of the country over which the roads are built are altogether different. For instance, the lines in Victoria for the most part are laid down on easy grades and run through fairly settled districts. In New South Wales the settlement is scattered and the grades in many instances are very steep on account of the mountains to be crossed. The highest elevation in Victoria is only 2,452 feet, whilst in New South Wales it is 4,525 feet. In the former colony a good engine can carry through loads of 250 tons, whilst in the latter from 90 to 100 tons is considered a fair load for an engine. The management of the roads, however, in Victoria until recently was subject to severe criticism. The complaints were so bitter and continued that an act of Parliament was passed in 1883 placing the roads under the control of a board of commissioners appointed by the Government. The act went into effect on the 1st of February, 1884. The commissioners consist of three in number and are a body corporate with perpetual succession and a common seal. They hold office for a term of seven years, at the expiration of which they are eligible for re-appointment, if the governor in council should so determine. According to the act all the lines in the colony are virtually under the control of the board, which is so constituted as to be entirely removed from political influence, and the result is that the lines are said to be worked purely upon a commercial basis. The commissioners can not be removed except by an address to the governor from both houses of Parliament at the same session, or by the Legislative Assembly alone at two consecutive sessions. The board of commissioners is charged with the construction of such lines of railway as may be authorized by Parliament, as well as with the management of existing lines. They are required by the act to report quarterly to the minister for railways, and to Parliament at the end of September in every year upon all receipts and expenditures of the lines. The chairman of the board receives a salary of £3,000 ($14,590) per annum, and each of the other commissioners £1,500 ($7,299) per annum. The success attending the management of the Victorian railways by the commission has led to the introduction of a bill into the Parliament of New South Wales authorizing the establishment of a board of commissioners with similar powers for the control of the railways of this colony. The bill referred to has been read a second time, and as it has met with little or no opposition will shortly become a law.

Sir Henry Parkes, G. C. M. G., the present premier of New South Wales, has from his first entrance into public life taken a lively interest in the construction of railways, and to him perhaps more than any one else the colony is indebted for the construction of its lines. He stated in a recent speech that the New South Wales railways would compare favorably with any others in the world. "Considering," he said, "the solid and permanent character of the great lines of our communication in comparison with some elsewhere, we may come to the reasonable conclusion that, though they have cost us more, they are in reality cheaper." In the same speech he drew the following comparison between the Australian railways:

I can not, of course, go into many details in relation to a question very interesting, but very large, and quite impossible to compass in such a discourse as that to which I must confine myself. But the longest railway in the sister colony of Victoria — that from Melbourne to Serviceton — is 312 miles. The longest railway in South Australia, from Adelaide to Hergott Springs, is 231 miles; the longest in Queensland — Queensland, remember, being a country which offers lengthy lines for railway construction, having a territory far larger than any other, if we except the northern territory of South Australia, and having points of population which can not be reached except by traveling, not scores, but hundreds, I might say thousands of miles — Queensland, this vast territorial colony, has no longer railway than that to Dalby Dilla, which from Brisbane is 410 miles. Well, this colony I find has constructed no fewer than six railways longer than the longest in Victoria. We have a railway from Sydney to Hay, 454 miles; from Sydney to Jerilderie, 412 miles; Sydney to the Queensland border, 492 miles; Sydney to Narrabri, 352 miles; Sydney to Albury, 387 miles; and Sydney to Bourke, 503 miles.

RATES OF FREIGHT.

The freight charges on the Australasian railways are considerably greater than on the lines in the United States. It is said, however, that there are circumstances which should be taken into consideration in comparing the charges of the two countries. The people here nevertheless are constantly clamoring for the reduction of the rates. The farmers in Victoria insist that it will not pay them to grow grain unless they can get a reduction of fully 50 per cent. on the present rates. The charge usually on produce in that colony per ton for 50 miles is 5*s.* ($1.22), and for 100 miles 9*s.* 9*d.* ($2.87), and £1 6*s.* 10*d.* ($6.52) for 400 miles,

The principal termini of the New South Wales lines running from Sydney are Albany, 386 miles, changing station at Victorian border; Bourke, 503 miles, terminus of the Western Line; and Tenterfield, 381 miles, terminus of the Northern Line. The following are the present rates on some of the principal articles on these lines: Coal, in owners' trucks, is charged for distances not exceeding 50 miles 1*d.* (2 cents) per ton per mile; minimum charge 2*s.* (48 cents) per ton. For distances over 50 miles ¾*d.* (1½ cents) per ton per mile, with a terminal charge of 3*d.* (6 cents) per ton; minimum charge 4*s.* 3*d.* ($1.03) per ton. Hay can be sent from Bourke to Sydney (Darling Harbor), 505 miles, at £5 4*s.* 4*d.* ($25.38) per truck, while straw and chaff costs £4 12*s.* 3*d.* ($22.44) per truck. The charges on wool undumped, scoured, per ton from Bourke to Sydney would be £5 3*d.* ($24.39), and for

greasy wool per ton, same distance, £4 3*d.* ($21.74) is charged. Wheat is charged at the rate of £1 12*s.* 1*d.* ($7.79) per ton from Bourke to Sydney, and in truck loads not exceeding 6 tons, £7 15*s.* ($37.71) per truck. If sent from Sydney to Bourke, 20 per cent. ($4.86) would be added. A rebate of the difference between the local tonnage rates and the through rates plus 1*s.* 9*d.* (42 cents) per ton will be allowed from country stations to country flour mills (on the up journey) and reconsigned in the shape of flour, bran, etc., to Darling Harbor (Sydney). Thus, if 100 tons of wheat are consigned during the year from Gerogery to a miller at Goulburn, 252 miles, and he reconsigns 80 tons of flour in the same period to Darling Harbor, 134 miles, the rebate would amount to £15 6*s.* 8*d.* ($74.37). Cattle from Hay to Homebush, 446 miles, at £10 5*s.* 4*d.* ($50.04) per truck. Sheep at £8 10*s.* 6*d* ($41.48) per truck.

It is stated by the railway department that the charge for carriage should be proportioned to the cost of service, and that it costs more per mile for the carriage of merchandise 100 miles than it does for carrying it 200 miles. This being the case there seems to be no just reason why those who desire to ship goods long distances should not have the benefit of proportionately decreased rates.

The subjoined table shows the average freight rates on the railways in the principal Australasian colonies during the year 1887, in English money:

		All produce, except hay, straw, and chaff.		Hay.		Straw and chaff.		
		Per ton.	Per ton in truck loads.	Per truck.	Average per ton in truck loads.	Per truck.	Straw, average, per ton.	Chaff, average per ton.
		s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*
New South Wales	50	5 4	.....	24 0	5 5	24 0	5 10	4 8
	100	9 9	9 9	31 9	7 2	28 1	6 10	5 5
	150	13 6	12 2	43 11	9 11	38 10	9 6	7 6
	200	16 10	14 7	54 9	12 4	48 5	11 10	9 5
	300	21 10	18 10	71 0	16 1	62 11	15 4	12 2
	400	26 10	22 4	87 3	19 9	77 2	18 10	14 11

		All produce, except hay, straw, and chaff, per ton.	Hay.		Straw and chaff.	
			Per truck (loose).	Per ton (pressed).*	Straw (loose), per truck.	Straw (pressed) and chaff, per ton.*
		s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*
Victoria	50	5 6	26 0	7 6	24 0	7 6
	100	10 6	41 0	13 6	39 0	13 6
	150	15 0	54 4	17 8	52 4	17 8
	200	17 0	67 8	21 10	65 8	21 10

* Hydraulic pressed, and minimum, 2 tons.

		All produce, except hay, straw, and chaff, per ton.	Hay.		Straw and chaff.	
			Per truck (loose).	Per ton (pressed).	Straw (loose), per truck.	Straw (pressed) and chaff, per ton.*
		s. d.	s. d.	s. d.	s. d.	s. d.
South Australia	50	8 4	50 0	10 5	50 0	10 5
	100	13 7	100 0	20 10	100 0	20 10
	150	17 9	150 0	30 9	150 0	30 9
	200	21 11	200 0	40 1	200 0	40 1

		All produce except hay, straw, and chaff, per ton.	Hay.		Straw and chaff.		
			Per ton (pressed to measure, 15 cubic feet per cwt.)†	Per ton pressed to other dimensions.†	Per ton (pressed to measure, 15 cubic feet per cwt.)†	Per ton pressed to other dimensions.†	Chaff (in bags), per ton.†
		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Queensland	50	10 10	10 10	16 3	10 10	16 3	29 2
	100	19 2	19 2	28 9	19 2	28 9	54 2
	150	27 6	27 6	41 3	27 6	41 3	75 0
	200	35 10	35 10	53 9	35 10	53 9	95 10

		All produce, except hay, straw, and chaff, per ton.	Hay, per truck.	Straw and chaff, per truck.
		s. d.	s. d.	s. d.
New Zealand	50	10 2	26 10	26 10
	100	14 4	43 6	43 6
	150	18 6	56 0	56 0
	200	22 8	68 6	68 6

*Straw—minimum, 5 tons per truck. Chaff—minimum, 3 tons per truck.
†Loose hay is not carried on the Queensland railways.

The rates on coal via the Great Western Railway, New South Wales, are 1*d.* (2 cents) per ton per mile for distances not exceeding 50 miles; minimum charges 2*s.* (48 cents). For distances over 50 miles ¾*d* (1½ cents) per ton per mile, with a terminal charge of 3*d.* (6 cents) per ton.

ACCIDENTS.

The comparative freedom from accidents on the Australasian railways is especially worthy of mention. Indeed, for a term of years the lines in South Australia and Queensland were wholly free from accidents.

The heaviest loss in any one year on the Victorian lines up to 1885–'86 was 38 out of 42,511,014 passengers carried. In 1886–'87 the number increased to 50, principally due to the accident at Windsor, the most disastrous in the history of the colony. The number of passengers carried on the Victorian lines during that year was 49,219,867. The accidents on the New South Wales lines are very few. The most serious one occurring in the history of the colony was at Cootamundra in 1885, when seven persons were killed.

TRANSCONTINENTAL LINES.

There are several lines of railway in the course of construction across the Australasian continent. For some years past both the colonies of South Australia and Queensland have been desirous of joining their respective southern and eastern shores by railway with the Indian Ocean, the terminus of the South Australian line being at Port Darwin, and that of Queensland at the Gulf of Carpentaria. Three trunk lines now start from the eastern Queensland coast and stretch for about 500 miles each towards the west. An influential English syndicate offered in 1883 to connect the western extremities of these lines by a transcontinental line with the Gulf of Carpentaria, but the proposal to do this on the land grant system did not meet the approval of Parliament. There can be but little doubt, however, that in the early future the Government of the colony will undertake the work and Normanton, it is said, will be its terminus on the gulf. Normanton is an important township with telegraph station, money-order office, and government savings bank. The town is situated on Norman River, about 25 miles from its mouth, and, according to a recent survey for the overland route, 1,382 miles northwest of Brisbane. A railway is now being constructed from Cairns, on the Pacific westward, and another from Normanton, on the gulf, eastward, both meeting in the celebrated gold field of Croydon, By this passengers from New South Wales to Normanton will soon be able to avoid the circuitous navigation through Torres Straits.

The South Australian Government has authorized the construction of a railway to connect Adelaide with Port Darwin, a distance of nearly 2,000 miles; but this ambitious work on the part of a sparsely-populated colony is necessarily a matter of time, though well commenced from both sides. Northward from Adelaide it is completed or under contract to Angle Pole, some 800 miles, and similarly under contract for a distance of 120 miles southward from Port Darwin. It is said by the Hon. Fane de Salis, member of the legislative council of New South Wales, and an able and painstaking writer on Australasian affairs, that passengers from Sydney will probably in the course of a few years reach the Adelaide and Port Darwin transcontinental at Tarina, between Lake Eyre and Torrens, by a New South Wales railway through Wilcannia, on the Darling River. Similarly, passengers from Sydney will reach the Queensland transcontinental line via Bourke (higher up the Darling), thus traveling in an almost straight line from Sydney to Normanton, on the Gulf of Carpentaria. It may be worth mentioning that the celebrated mines of Silverton, just within the western border of New South Wales, are connected by railway with Port Pirie, on Spencer's Gulf. It has been determined to push forward a road between Perth, in Western Australia, and Adelaide, South Australia. This route will place Sydney in direct communication with Perth by way of Silverton.—SYDNEY, *April 17, 1888.*

G. W. GRIFFIN,
Consul.

SELF-REPRODUCING FOOD FOR YOUNG FISH.

In a report made from this consulate in February last, an account was given of a new and highly successful process invented by Mr. Francois Lugrin, of Geneva, for propagating in large quantities and at a nominal cost various species of *daphniæ*, *cyclops*, *limnoe*, and other species of minute *crustacea* upon which the young fry of various fish, notably the different species of *salmonidæ*, naturally feed during the months which immediately succeed the absorption of the umbilical sac. The statement was therein made that this new means of sustaining the young fish upon natural food until they attain sufficient size and strength to make their way successfully in open water had solved the hitherto most serious obstacle in fish-culture. This assertion has received recently such a striking and conclusive illustration that it is deemed worthy of record in these reports.

For a number of years past the Swiss Government and several private firms and individuals have made liberal and determined efforts to restock the exhausted lakes and streams of Switzerland. Until quite recently all these efforts proved practically abortive. The Genevois of September 13 says on this point: "Hitherto all these praiseworthy essays have had only a negative result; at all events, it is impossible to cite a single case of success. Tens and hundreds of thousands of small fry were hatched and turned into the waters of Geneva, among which were several species which it was hoped to acclimatize, but never a fish of these species has been caught or seen."

The same journal and several others of approximate dates published at Geneva and Annecy then relate the notable success which has recently been achieved by the system of Messrs. Lugrin & Du Roveray, who own and manage the piscicultural establishment at Gremaz, in the French department of Ain. Near the end of December, 1886, Messrs. Lugrin & Du Roveray received six thousand eggs of the North American *corégone* or *féra*, a species of salmon, which, in the absence of definite information, I suppose to be identical with the land-locked salmon of our northern lakes. At all events the fish is indigenous to the United States and was unknown in Europe until artificially propagated here. The eggs in question were duly hatched and the young fish kept in the tanks at Gremaz, fattening upon the abundant living food provided by the Lugrin process, until the 24th of April last, at which time five thousand of them were put into the lake of Annecy, a beautiful sheet of water in the department of Haute Savoie. At this time these robust young fish had attained an average length of $5\frac{1}{10}$ inches and weighed about $1\frac{1}{2}$ ounces each. On the 1st of the present month of September, one hundred and thirty days after being thus planted, two of these fish were caught at different points in the lake, and were officially weighed and measured. Each had attained a length of $8\frac{1}{4}$ inches, and weighed $4\frac{1}{4}$ ounces. They had thus trebled in weight and nearly doubled in length in a little more than four months. Numerous other specimens of the same brood have been taken in the nets of the fishermen of Annecy, but they are, of course, liberated, it being rigidly forbidden to interfere with the final result of an experiment which has begun so promisingly.

Commenting upon these facts, the Swiss journals regard the problem of restocking their depleted waters as substantially solved, and Mr. Lugrin has received from official sources many flattering congratulations.

Their fatal difficulty has hitherto been that, owing to the absence of available food and the intense cold of the Swiss lakes and rivers, most of which are fed from glaciers, the tender young alewives which have been turned in a few weeks after hatching have perished from cold, hunger, and other accidents, whereas the robust and vigorous yearlings, already of an age to catch living food and fight their way, have thriven with the extraordinary results above stated. It is estimated that a thousand well-grown and healthy yearlings are of more value for stocking open waters than a million of the delicate creatures of the tender age at which they have been hitherto planted, for want of means to properly feed them in confinement.— MARSEILLES, *September 27, 1888.*

FRANK H. MASON,
Consul.

MORMONS.

From time to time there have been articles in the public press referring to a possible exodus of Mormons from Utah to Mexico. These people have sent many colonies down into New Mexico and Arizona and of late years into old Mexico. Some of their most prominent men have carefully looked over lands for this purpose in Sonora and Chihuahua and considerable progress toward establishing strong colonies has been made. Of late there have been some criticisms by Mexican papers, both as to the Mexican authorities and the colonists. These have brought out a letter from Mr. Henry Eyring, the Mormon agent in Mexico, to the "Mexican Financier," which with editorial comment is printed by that paper in its issue of the 13th instant.

Mr. Eyring places the number of families at 150 and the land already purchased at 200,000 acres. Perhaps, as he declares, the "Church in Utah" is not making any effort to increase the colonies in Mexico. I am well satisfied, however, that there is now and has for over two years been a very strong effort by men who stand very close to and are of the "Church" to buy lands and get good concessions in Mexico. I believe they are likely to succeed and that within a few years they will number 200,000 in Northern Mexico. Mexico would certainly not be a loser in having these now arid, barren wastes settled up and made fertile, even if by Mormons. — MATAMOROS, *October 29, 1888.*

WARNER P. SUTTON,
Consul-General.

[From the Mexican Financier.]

We publish in another column a letter from the official representative of the Mormons in this country. It will be noticed that he denies that the Mormon church in Utah is making any effort to increase the number of Mormon settlers in this country or to purchase more lands at present. Our correspondent admits that a prejudice against the Mormons exists among "less-informed persons," but he asserts that the Mormons coming to Mexico do not desire to meddle in politics, but only wish to mind their own business and become good citizens. We sincerely hope that this is their purpose, but even Mr. Eyring will not, we fancy,

deny that the facts of history do not exhibit the Mormons as loyal citizens of the United States, obedient to its laws. Was the setting up of the doctrine of polygamy by the prophet Joseph Smith an act indicating obedience to the laws? And has not polygamy been the one thing to which the Mormons have adhered with the greatest tenacity? If the Mormons, on coming here, practice polygamy, they certainly are not submissive to the law of the land nor to the precepts of Christianity, and the Mormons will do well to remember that this is a Christian country, that the Catholic faith is held by the vast mass of the Mexican people, and that the Catholic church insists most strenuously on the sacredness of the marriage relation in which one man is joined to one woman. The Mormons will make a tremendous blunder, fatal to themselves, if they practice polygamy on Mexican soil in opposition to the religious convictions of the Mexican people. A report from two members of the recently appointed "Utah Commission" has been filed with the Secretary of the Interior at Washington, and these commissioners say that, in their opinion, "a great majority of the Mormon people have wisely resolved that the practice of polygamy should be abandoned." We hope that this is true, for while we believe in the protection and tolerance of all religious bodies, not in opposition by their practices to the civil law, we unhesitatingly condemn any attempt to introduce polygamy into Mexico. We will take occasion hereafter to examine the claim of the Mormons to be loyal citizens. We shall, we think, be able to show that for more than half a century they have been in continual conflict with both the State and Federal authorities of the neighboring republic, that they have occasioned civil war, defied the law, broken up United States courts, put indignities on Federal judges, and thus exhibited a disloyalty to the law which has become a fact of history. Will Mr. Eyring assert that the Order of Danites, a Mormon secret society organized in Missouri in 1838, did not have for its purpose "upholding the authority, revelations, and decrees of Joseph Smith as superior to the laws of the land, and of helping him, first, to get possession of the State, then of the United States, and, ultimately, of the world?" What an exhibition of "loyalty" was this? Is not Mormonism in its essence hostile to the civil authority? Have not its practices been repugnant to the moral sense of Christendom?

We have received the following letter which is self-explanatory:

MEXICO, *October 4, 1888.*

Editor Mexican Financier:

DEAR SIR: As one of your subscribers I always read your valuable publication with much interest, and admire the spirit of enterprise manifested in your columns. An article which appeared in your number of September 29th, respecting a probable immense Mormon immigration, has attracted my attention. As I am here as the representative of the Mormon colonies in the State of Chihuahua, I am thoroughly posted as to their present condition and future prospects of increase. I will state that said colonies number in the neighborhood of 150 families and occupy about 200,000 acres of ground, but there is no truth in the statement that 4,000,000 acres had been purchased by the Mormon community. While the small colonies which have been founded are reasonably prosperous, yet there is no probability of any sudden or rapid increase. The Church in Utah is making no effort whatever to increase the number of settlers in Mexico, nor to purchase more lands at present. These matters are left entirely to private enterprise, and the question as to whether many Mormons will come to settle in Mexico will depend much upon the success which the colonies now in existence will have.

Our policy is to strictly mind our own business, develop the resources of the country to the best of our ability, faithfully observe the laws of the land, and not meddle with the politics of the Republic. We appreciate the kindness shown us by many Government officials as well as the press of the Republic, and hope to merit the kindness manifested to us. We are not unmindful of the prejudice that exists in the minds of the less-informed respecting our people, but hope to be able to show by our works in this Republic that we can be good as well as industrious citizens. Hoping that you will make use of the information I communicate to you for the benefit of your readers,

I subscribe myself, very respectfully yours, HENRY EYRING,

Representative of the Colonies of Juarez, Diaz, and Pacheco of the State of Chihuahua.

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